

# COAL AGE

McGraw-Hill  
Publishing Company, Inc.  
James H. McGraw, *President*  
Edward J. Mehren, *Vice-President*

*Devoted to the Operating, Technical and  
Business Problems of the  
Coal Mining Industry*

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Volume 33

NEW YORK, SEPTEMBER, 1928

Number 9

## *Grip It and Lick It*

**I**N NEW YORK CITY at the present time a nationally known department store in co-operation with an association of interested manufacturers is staging an exhibit of oil-burning equipment for the home. The prestige of a great institution and a great name in merchandising is invoked to attract the buying public. Throughout the land the makers of oil burners are telling their story day in and day out through newspapers, magazines and by direct solicitation. If the sales managers of these companies are overlooking an avenue of approach, it is an unmapped path to their competitors as well.

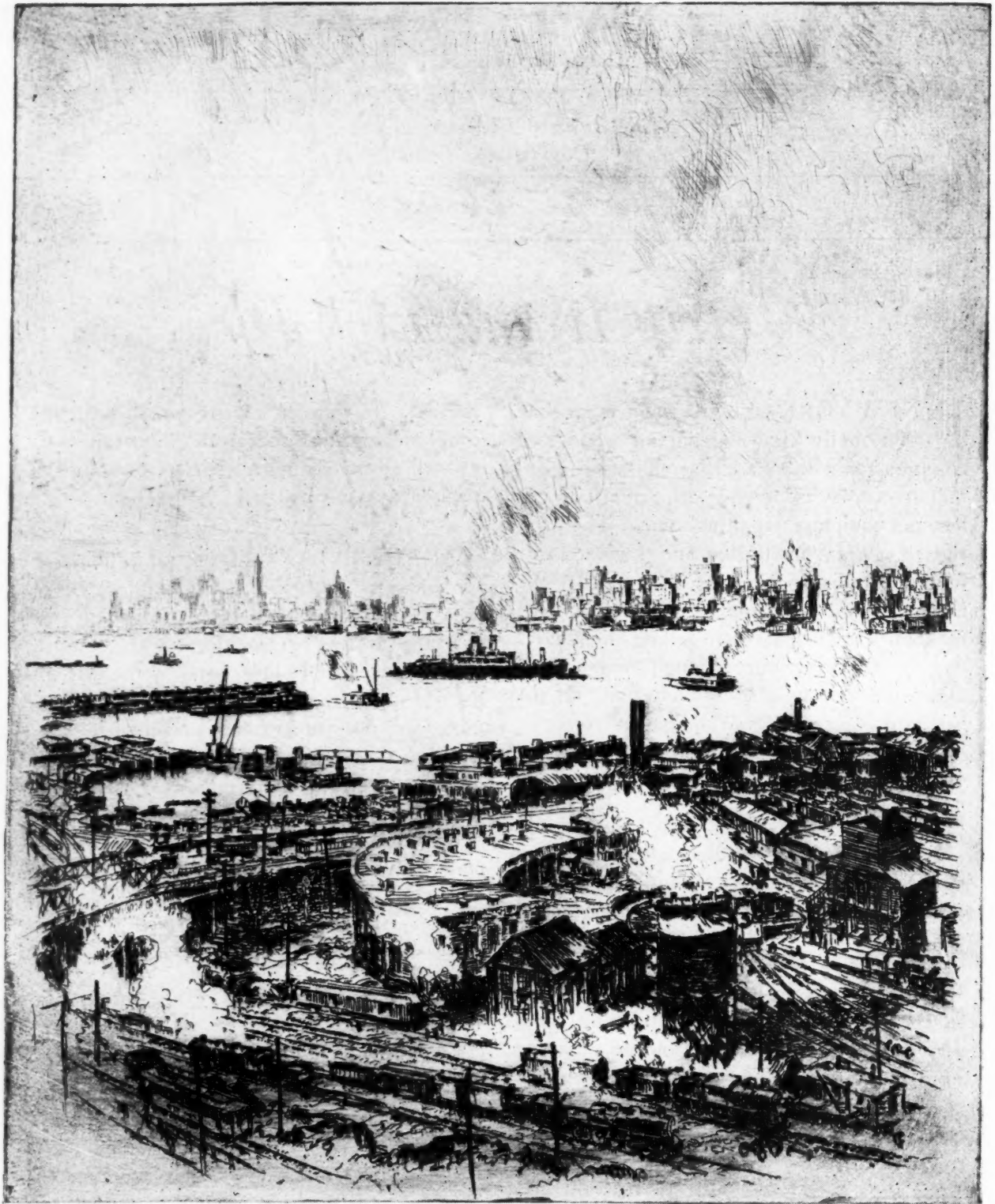
**T**HE recital of these activities does not make pleasant reading for coal men—particularly those whose major interests are tied up in the production and distribution of coal for household consumption. It would be comforting perhaps to ignore the facts. But there is no profit in playing the ostrich in the sand, no security in treating these activities as a passing wave and no salvation in denunciation. The question which the coal industry must face is how it can best come to grips with a real competitive situation and lick it.

**N**O REASON exists why the coal industry cannot match the oil industry and its allies in showmanship. No reason exists why the coal industry cannot match dollars with the oil industry and its allies in advertising; in fact, a very modest start in that direction already has been made. More than equal showmanship and equal or greater advertising appropriations, however, is

needed. If victory is to rest with coal, the coal industry must understand the weaknesses as well as the strength of its position in the competitive picture.

**P**ENETRATION of oil as a domestic fuel in anthracite-consuming territory was measurably accelerated following the war by careless preparation on the part of some hard-coal producers and by the insecurity of supply created by labor turmoil. That, however, does not explain present progress. Neither does price. The appeal which oil is making is one of convenience; it is part of the push-button age. The buyer the loss of whose business most acutely depresses the coal man is the buyer who is willing to pay a premium if necessary for convenience. And apparently little concerted effort has been made to meet this buyer's demand.

**T**HIS demand for convenience—which in the basement means automatic heat control and mechanized firing and ash removal—cannot be answered by exploiting the hazards or the weaknesses of competitive fuels. Nor is there any satisfaction to be gained in passing the responsibility for meeting the demand to the equipment manufacturer. Blaming the backwardness of the manufacturer is a poor substitute for profit or tonnage. The problem of meeting the demand for convenience has become the problem of the coal industry, and the industry must solve it with or without the co-operation of existing manufacturers of home-heating equipment.



*Courtesy Schwartz Galleries, N. Y.*

## Part of New York's Coal Supply

*From an Etching by  
O. Kuhler*



# ROCKY MOUNTAIN ENGINEERS

## *Analyze Mechanization*

## *And Management Problems*

**M**ECHANICAL loading has its unsafe features, but statistics in the State of Wyoming show that it can be made even safer than hand loading, said Lyman Fearn, chief inspector of that state at the annual summer meeting of the Rocky Mountain Coal Mining Institute, held at Rock Springs, Wyo., Monday, Tuesday and Wednesday, Aug. 27-29. The first two days' sessions were held in the Elks Club.

Mr. Fearn said that in the Rock Springs district 1,260 man-shifts were worked per injury with hand mining as against 1,921 with machine mining. In the Hanna district hand mining had 1,320 man-shifts per injury and machine mining 2,024. Put in another way and rating by tons per injury, the Rock Springs district mined 9,308 tons by hand labor per injury and 16,069 tons by machine mining. In the Hanna district the respective figures were 10,382 and 16,929.

Walter M. Dake, consulting engineer, Joy Manufacturing Co., Franklin, Pa., declared that figures from seven states already collected showed that the introduction of mechanical loading had reduced the cost of compensation per ton from 35 to 65 per cent.

**T**HE City Counsel, T. S. Taliaferro, welcomed the members of the Institute in the name of the Mayor.

At the afternoon session F. C. Miller read a paper on safety in which he declared that the miner had a definite responsibility to assist in securing his own safety and that if props were not placed in the prescribed manner it was not the duty of the mine foreman to stop and see that they were put in place and to persuade, coax or cajole the miner into setting the required props or to scold him for failing to do so, but to tell the man to go home and come back tomorrow.

*By R. Dawson Hall*

*Engineering Editor, Coal Age*

Gomer Reese, general superintendent, Kemmerer Coal Co., Kemmerer, Wyo., then read his paper on the new tippie at No. 5-A Kemmerer mine, which is briefed on p. 528. He was followed by W. D. Bryson, superintendent, Colony Coal Co., Dines, Wyo., whose remarks also are briefed, and by Edwin H. Johnson, sales manager, Safety Mining Co., Chicago, Ill., who read the paper by Frank N. Bletcher, general manager, Ideal Coal Co., Superior, Wyo.

F. W. Whiteside, chief engineer, Victor-American Fuel Co., Denver, Colo., said that loading by machine by his company had so far reached only the experimental stage. They had conveyors of flight drag type and the Jones shaking conveyors. With the latter they had obtained excellent results and expected even better. They were working on a system of bringing down coal without shooting so as to meet the handicaps the law placed on them of shooting when no men other than shotfirers were in the mine.

Professor Carpenter then read his paper on "Fuel Conservation."

At the Tuesday meeting E. H. Dennis, supervising engineer, Denver, Colo., said that 183 chapters of the Joseph A. Holmes Safety Association were in active operation. He presented for that association an award to Mr. Muir, mine foreman, as representing the Robinson No. 1 mine of the Colorado Fuel & Iron Co., Walsenburg, Colo., for having had, between July 27, 1915, and March 1, 1928, not a single fatal accident.

Mr. Dennis also presented the association's award to No. 6 mine of the Phelps Dodge Corporation, at Dawson, N. M., for having run a student's school in that mine for 20 months and produced 45,000 tons with only 3 minor accidents entailing a loss of only ten days' work. The certificate

being handed to W. D. Brennan, the general manager of the company, he said that the segregated school had been abandoned and now each mine had its own school, for which two or three rooms were provided.

**G.** A. KNOX, superintendent, Gunn-Quealy Coal Co., discussed the preparation of commercial coal, condemning the requirement of the trade that coal should be shipped in box cars because it was not only costly to load them but also because the cars could not be loaded without breakage. George A. Murphy, general superintendent, Spring Canon, Utah, said that his spiralizers, which he was using on pea coal, were giving excellent results. He hoped to use them on nut coal also.

F. W. Whiteside said they had been used at Ravenwood mine, near Walsenburg, and had given good results till a car of wet coal would come and then there were a few hours of misfortune. Mr. Murphy said the adjustment of the operation of spiralizers to local conditions was a tedious job but when completed the results well justified the effort expended. As for wet coal, all his was wet and his spirals were adjusted to that condition. All the coal was doused before it reached the dump.

D. J. Parker, now supervising engineer, Salt Lake City, Utah, in his paper deplored the fact that no progress had been made in mine safety because of the introduction of machine hazards which negated advances in other directions.

In the afternoon trips were made to No. 8 Rock Springs mine of the Union Pacific Coal Co., the Colony mine, already mentioned, and the Premier Coal Co.'s mine at Superior, Wyo. All these mines operate conveyors and the first a 6-ton scraper.

The morning meeting was held in the Rialto Theater so that S. W. Farnham could show the Garcia pic-

tures of Russia. Mr. Farnham said that Russia produced 32,000,000 tons annually, of which 23,000,000 came from the celebrated Donetz basin, which had pitches up to 70 deg. and coal thicknesses from 4 ft. down. There were 40 seams but only seven or eight of these were thick enough to work.

The Jones conveyor film was shown and the safety committee through its chairman, George B. Pryde, vice-president, Union Pacific Coal Co., presented several amendments which were approved by the members.

R. R. Knill, assistant inspector of mechanical loading, Union Pacific Coal Co., Rock Springs, Wyo., spoke

on time studies and their value, and O. G. Sharrer, assistant superintendent of the same company at Superior, Wyo., discussed the qualifications of officials and how they may best be secured.

T. S. Taliaferro in a paper pressed the value of using the courts for the trial of compensation cases rather than establishing a commission that would have to travel around the state. In order to reduce the cost it is arranged that if the parties agree a statement can be made in writing and the judge can act on it in chambers or on vacation. This statement sets out the material facts and states the award desired by the parties.

The total depth of shaft, was 575 ft.

The coal was found 4½ ft. thick and dipping 12 deg. to the west. A triple entry was started north and south with a slope and two aircourses to the east or up the pitch. The mine is being worked partly by longface and partly by room systems. All narrow work is rock-dusted.

Cars are hauled by storage-battery locomotives 32 in. high above the rails, having individual charging sets. A 7-ft. steel fan with reversing doors provides ventilation. This fan has remote control and a Texrope drive. It is actuated by a 125-hp. 2,300-volt motor. A double drum 300-hp. 2,300-volt hoist raises the coal to the tippie.

The tippie tracks are of 60-lb. steel and have two loaded and one empty track. Three rails and a passing track are provided half way down the slope and two tracks go from this point to the slope bottom.

Car hauls regulate the trips on the tippie. After the rope is attached the empty trip is pushed into the mine and over the knuckle by the car haul, one car haul being so located that it takes care of the trips for both tracks entering the mine. These car hauls can be manipulated by push buttons at various points in the tippie as well as from the engine room. A Streeter-Amet 10-ton scale automatically records the car weights.

## *Drives Slope East to Meet West Pitch*

**A**FTER drilling twelve holes to determine the extent of the sublet seam at Susie, Wyo., the Kemmerer Coal Co. commenced, April 1, 1926, the development of No. 5-A mine by a rock slope at a point 4,800 ft. from the outcrop, driven on a pitch of 14 deg. 30 min. to intersect the coal bed at a distance of 1,500 ft. This rock slope was made 12 ft. wide by 7 ft. high and driven 300 ft. by hand loading, at which point a Hoar No. 2 air-driven shovel loader was installed. Here the height of the slope was increased to 9 ft. to accommodate the shovel.

Ventilation in the rock slope was provided by a Buffalo blower with 14-in. metallic tubing on the suction end and Flexoid tubing on the exhaust end which drew the smoke out from the face. The blower was kept within 300 ft. of the face and advanced 150 ft. at a time.

To remove the water one two-stage centrifugal pump and one single-stage were used. The latter, because of the ease with which it was moved, was kept at the face with hose connections to the other pump. The two-stage unit was moved down by 100-ft. stages. At a point 800 ft. from the surface another two-stage centrifugal pump with automatic control was installed. Here all the water from above was collected in a 2,000-gallon box. All the water from below was pumped to the same box, the pump starting to operate when the water reached a certain level.

Concurrently, an airshaft 10x10 ft. clear of timbers was sunk and a crosscut was driven from the slope a distance of 75 ft. As the shaft lacked 180 ft. of reaching the coal a raise

4x6 ft. was driven up to meet it at a point 150 ft. from the bottom. A bulkhead was built at the bottom of the raise when started and all rock collected in a chute from which the mine cars were loaded. The walls remaining were shot with the raise and removed by chute and mine cars.

*By Gomer Reese*

*General Superintendent  
Kemmerer Coal Co.  
Kemmerer, Wyo.*

## *Commercial Coal Conveyor-Loaded*

*By Frank N. Bletcher*

*General Manager, Ideal Coal Co.,  
Superior, Wyo.*

**A**LITTLE over two years ago we introduced three conveyors in Z formation, one a shaking conveyor along a 210-ft. face, another, also a shaking conveyor, working in a back heading, and the third, which carried the coal through a crosscut to the mine cars.

After three months work we found that the roof could not be controlled except at excessive cost. Loading was cheaper but all the profit was lost in the excessive posting and cribbing that was necessary. The coal ahead was becoming crushed and fines increased rapidly.

The equipment was diverted to a pair of panel planes which were being driven about 1,000 ft. up the pitch. McCarty duckbills were used on this work, greatly decreasing cost and increasing speed. In February of this year one of these conveyors was used

in recovering panel chain pillars and stumps and one on entry driving. Two Universal, or Ernsbarger, duckbills were used in place of the McCartys. These proved better suited to the work. Between Feb. 15 and June 30, 5,000 ft. of narrow work was driven, one machine working two shifts six days a week and the other as steadily for about a month. On the narrow work three men undercut, drilled, shot and loaded coal at the face and one supervised the discharge of coal into the car. In this work about 3 cuts, or 75 tons, were loaded per shift.

Today four shaking conveyors are being operated in adjoining rooms, all loading onto a main conveyor in an entry. The coal of all four room conveyors is loaded at one point. Empty cars are brought through the back heading and up through a slant between the face of the entry and the loading point. They are then dropped to the discharge end of the main conveyor as a trip. A shaking conveyor



is being used to drive entry ahead of the rooms in which the other shaking conveyors are working.

Fully 90 per cent of the coal is handled by the duckbill. The other 10 per cent is hand loaded. The shovel end will handle chunks of coal too large for men to lift into a mine car. Perhaps the percentage of lump coal passing over a 3-in. screen has not increased much but there is a large percentage of big pieces.

The rooms are driven 25 ft. wide with a 20-ft. pillar. They are turned at 60-ft. centers but not at right angles to the heading from which they are driven. A 50-deg. angle has been chosen, so that the rooms will travel directly on the face. As the coal is friable and has many slips, a better product can be obtained by thus orienting the rooms. As soon as they are 300 ft. long the left pillar is drawn back, using the duckbill as much as possible. There is much more hand work on pillars than on rooms, but, by using swivel joints in the pan line, duckbills can be used extensively.

Ten-inch side boards are set on the main conveyor to enable it to handle the output from four rooms, though but rarely are they all at full blast at the same time. The loading point is not changed until about 400 ft. of pans are on the string. The four rooms produce about 375 tons per eight-hour day.

Four holes are driven in the face, using 9½ sticks of permissible explosive. The upper corner is shot a trifle harder than the rest so as to give the duckbill a good start. On working down the face with the duckbill most of the coal falls over on the shovel. The coal does not have to be shot any harder than with hand loading.

As soon as the upper corner is cleaned up the mining machine is sumped in and follows the duckbill down the face. The electric drill follows. Usually in two hours the coal is cut, drilled, shot and loaded out. The three operating cycles thus take six hours. The rest of the time is used for adding pans, etc. In the four rooms twelve men are used at the faces, two men at the loading point, one oiler and greaser, a mechanic and two timbermen.

A mechanized operation needs closer supervision than a hand-loading mine because a machine failure decreases production lamentably. It needs also a better class of workmen and harmony between these and the mine foreman.

## *Safety, Tonnage and Quality with Duckbills*

*By W. D. Bryson*

*Superintendent, Colony Coal Co.  
Dines, Wyo.*

ON SEPT. 12 last year the Colony Coal Co. purchased its first duckbill conveyor and in the remainder of the month loaded 1,184 tons. In October the output was 3,064 tons and this was maintained until work slackened in February. The plans of two mines were changed to suit them for this class of work and three more units were purchased which have been working since June 1. In all the output thus produced has been 40,000 tons.

With the duckbills the accident rate can be lowered, I believe, because the haulage is now on the level and not on the slope, thus eliminating ropes and gradients. The men are no longer anxious to "load the car first" before they set their posts. All employees,

being on day's pay, get as much money for making themselves safe as for loading cars.

As much tonnage can be obtained from a conveyor place as from ten hand-loading rooms. Thus supervision is less difficult. Only half as many men are needed for the tonnage produced.

The quality of the coal is bettered rather than reduced. As far as size is concerned, larger lumps can now be loaded than with hand work and the concentration makes possible a degree of supervision that will improve both shooting and handling. The equipment will drive levels, planes, crosscuts, room necks and everything but pitching slopes.

Breakdowns and difficulties have been experienced but the results have been gratifying. Next year 50 per cent of the coal at Dines should be produced by duckbills.

## *Good Officials—How Shall We Find Them?*

*By O. G. Sharrer*

*Assistant Superintendent  
Union Pacific Coal Co.  
Superior, Wyo.*

MEN who will be successful have certain infallible marks which, usually, have little to do with their education or general knowledge of mining. Education and experience can be acquired but some other qualities are like red hair—you either have them or you don't and there is nothing to be done about it.

The first qualification is dependability; that is, you must know that a man will complete an assigned task against severe obstacles. Second, a willingness to accept responsibility. This man is not running for instructions every hour. He uses the telephone seldom and then only when absolutely necessary. Third, a sense of order about himself, his home and his possessions. This man's existence is not aimless. He knows what he wants to do with his life, even if he cannot see how to go about it. The fourth qualification is difficult to describe. Elinor Glyn designates a somewhat similar quality by the title "It," but for one not gifted in the use of words an example gives the best definition.

Have you ever noticed in a group of men working together on a common task there usually is one to whom the others look for guidance and in-

struction even when he has no authority whatever? He may not know any more about the task than the others but he has an indefinable something which allows him to dominate and lead his fellows and with their consent. This ability to lead men, call it by what name you will, is the prime requisite of a successful official, and without it all other qualities are useless. I know of some cases where men have been successful who possessed only this one talent.

For many years the technical man has had a difficult time in coal mining. He was limited to the position of mine surveyor and was occasionally allowed to redesign a coal tippie that had been built by rule of thumb. In general, he was given to understand that he was to be seen only occasionally and that he wasn't to be heard at all.

Engineers have certain faults which are the direct result of their training. For instance, they are much inclined to hold to theory rather than practice. They quite often do too much with pencil and paper and not enough with eyes and ears. They often are dictatorial and will consider no man's way but their own. Young engineers are not in a position to sweep the field simply because they can turn a right angle or make a coal analysis. Sometimes a little knowledge of human nature is worth more than a four-year college course.



# SCRAPER LOADING

## *Speeds Development at Commodore Mine*

**S**CRAPER LOADING as a means of advancing entries 18 to 24 ft. per day in low coal is the means employed by the Clearfield Bituminous Coal Corporation in its Commodore mine at Commodore, Pa., to secure rapid development of a newly added territory. The mine is in the "E" seam, which varies from 3 to 4 ft. in thickness, the average being  $3\frac{1}{2}$  ft. The system employed not only provides for rapidly driving the entries but for driving all rooms narrow to their full depth, the room pillars to be drawn back later on a retreating "V," again using the Entryloader.

Cross-entries on 100-ft. centers are driven at right angles to the main entries through the new area. These entries are spaced 500 ft. between pairs, so that rooms driven both ways will be 250 ft. deep, and are driven through to the boundary, the rooms being necked, as the entry advances. Each entry is advanced in 200-ft. sections with the Entryloader and this is the spacing of the crosscuts or breakthroughs.

Entries are advanced in accordance with the plan shown in Fig. 1. This plan provides for concentrated working, with the result that 200 to 300 ft. of narrow work 10 to 14 ft. wide may be driven without moving of any of the apparatus necessary to the cutting or loading. All equipment for cutting and shooting the coal remains at the face and advances with it and the operation of removing the coal goes on continuously throughout the shift. Air is supplied at the face by

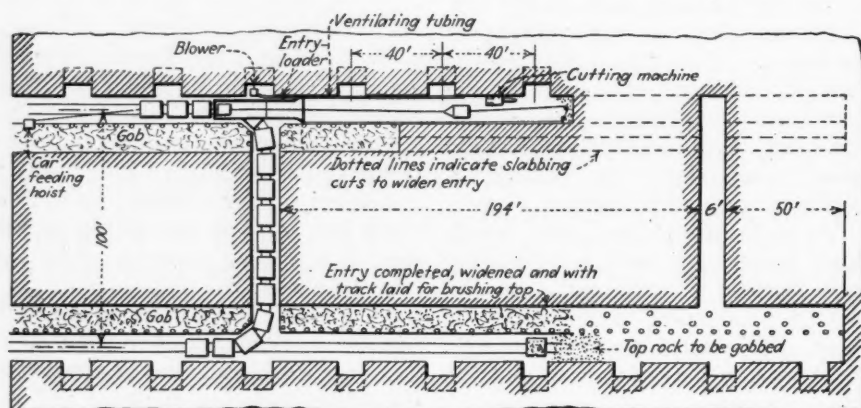
a blower and tubing, to which additional lengths may be added from time to time. The loading chute, the blower and the cable reel for the cutting machine are stationed at the last breakthrough, which also is the loading station. Cars are fed past the chute by a small electric hoist conveniently placed back of the loading station and operated by a controller at the operator's seat.

**C**UTTING, drilling, shooting and loading of the coal goes on continuously in repeated cycles, three to five of which may be completed in a single shift—depending on the height of the coal and the width of the driving. The scoop loads itself, being specially designed with rear end open to travel through a pile of coal at the face and pick up its load on the return trip by automatically closing its rear

door. Two men, one on each side of the face, shovel the coal out in front of the jack in the path of the scoop. It is not necessary to shovel the coal into the scoop itself. When all of a cut is loaded out the scoop is stopped about midway on its return trip to the face, the tail rope sheaves and jacks are thrown to one side, and the cutting operation begins.

Convenient machinery means savings in the time required to perform the operations, and the operation of cutting conforms to this rule. As the cutting machine has been resting along the left rib a few feet from the face, it can be quickly moved forward and sumped up. After the running cut is completed it may be immediately dragged back and lodged against the rib out of the way. While the cutting is being done the Entryloader operator carries powder and shooting supplies to the face, so that drilling and loading of the shots may follow immediately after the running

Fig. 1—Entry plan; Goodman scraper loader





cut is completed. A special terminal block mounted on the cutting machine serves as a source of power for the electric drill. With the drill, fuses, tamp rod and shot wire all handy, little time is taken to prepare the face for shooting.

Shooting follows immediately after preparation of the face, the tail jacks being set in place first. A small battery and 100 ft. of shooting wire allow the men to set off the charges from a safe distance. It is then necessary to allow the fresh air to blow out the smoke. This interval is short because of the rapidity with which the air changes, and the men are quickly enabled to return to the face and begin loading.

The Entryloader is placed at the last crosscut in entry driving or in the room neck in room driving, with the car hoist located 60 ft. behind it. One man is in charge of the loading station and it is his duty to control the movement of the scoop to and from the face, move the cars (by operating the hoist controller), look after the blower and carry powder to the face. In his operation of the scoop he is guided by a signal bell actuated by the men at the face.

**I**N FIG. 1 the right entry has been advanced to 50 ft. past the last crosscut and widened. Track has been laid and the brushing of the top is being carried out while the left entry is being driven up narrow in preparation for widening and brushing. Room necks, turned at intervals of 40 ft., are shown on both entries. In necking rooms one cut is loaded out as shown and the second cut is made, but the coal is allowed to remain in place for future operation.

As shown in Fig. 1, cars are fed to the Entryloader from the crosscut at the loading station. Track

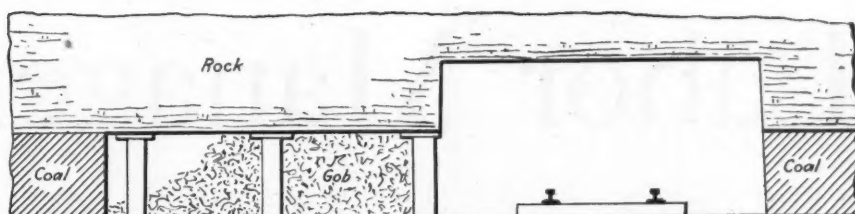


Fig. 2—Entry section showing roof disposal

is laid through the crosscut and empty cars are pushed through and under the Entryloader. A 20-ft. extension to the loader chute makes it possible for the cars to make the turn from the crosscut and be straight at the loading point. The car feeder hoist pulls the trip through car by car until it is loaded. If operations were being carried forward in the right-hand entry the cars would be pushed through the loading point and back on track laid in the crosscut, which would have a dead end. The trip is then handled by the car hoist.

**I**N BRUSHING an entry which has been driven the rock is gobbled between the posts as shown in Fig. 1. A detail section of an entry after brushing is shown in Fig. 2. Before shooting the top a break row of timbers is set along the middle of the entry so that when the rock is shot it will break along a definite line. Other timbers are set behind this row as shown in Fig. 1. Fig. 4 shows the appearance of an entry after gobbing is complete. The men brushing the roof finish 200 ft. in one entry at about the same time the cutters and loaders complete the other. The brushers follow the cutters and loaders and the track layers follow the brushers, thereby making the work continuous.

When a pair of entries is driven to the boundary, the entry-driving

Entryloader with its chute extension is trammed to the next location to drive another pair. The rooms are then ready for hand loading. If, however, they are to be machine driven another Entryloader without an extension starts driving rooms off the completed entries. These rooms are on 150-ft. centers and are already started by having one cut loaded out and another one placed. They are driven 250 ft. deep, which is half the distance to the next entry. The narrow-room driving is similar to the narrow-entry driving except that no slabbing cuts are made and the Entryloader has no chute extension. The work at the face in room driving is the same as in the advancing of the entries, and the work at the car-loading station is the same except that coal is loaded into cars passing on straight track at the rear of the loader. Later the rooms on 150-ft. centers will be used as a runway for the scoop when loading out the pillar coal on a retreating "V" system.

**O**RDINARILY the room work will consist of hand loading. However, the company is experimenting with the "V" system in the removal of the pillars between the rooms on 150-ft. centers and expects that this method will prove successful, though it has not been generally adopted as yet. The use of the scraper loader assures rapid development, however, which is the principal object in view. Rapid development

(Turn to page 536)

Fig. 3—Loading out the face

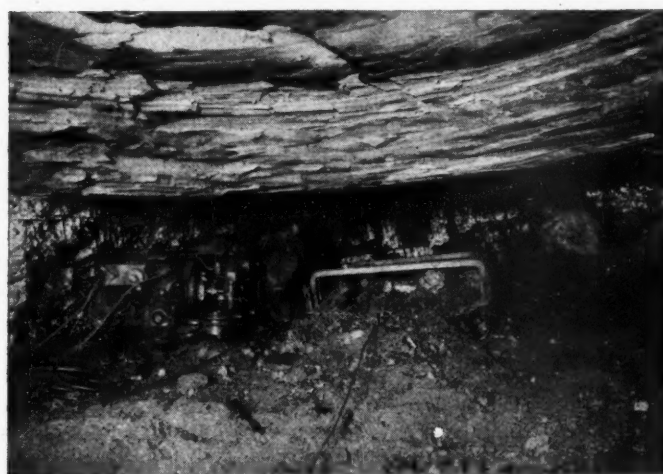


Fig. 4—Roof brushed and gobbled



# Labor Manager's Place *In the Industrial Organization*

By Edward S. Cowdrick

*Industrial Relations Counselor*

A DOZEN years or so ago American industry began to be conscious of a new face at the official table. The face was that of the industrial relations manager, who was just emerging from the obscurity of the employment desk or the "welfare" office to take a position which, in the subsequent years of the war boom, grew steadily in importance and dignity. Thus was developed the profession of labor management. Like other new professions, it was much misunderstood, and its repute suffered from the sprinkling of quacks among its honest practitioners. Even today the position of labor management is somewhat anomalous. True, there are few who now deny that it has a function to perform in industry, but there are many more who are uncertain just what that function is or just where is the proper place of the personnel director in the official family.

This uncertainty is due largely to the origin of labor management and the background against which it developed. Modern conceptions of industrial relations do not greatly antedate the opening of the World War. For many years before, however, there had been occasional efforts at welfare work, including housing, medicine and various "sociological" experiments. Likewise there had developed in some companies various types of industrial education; in others, separate employment departments.

It is mainly from these three sources—welfare, education and employment—that modern industrial relations practice traces its ancestry. Many of the personnel directors in the World War period had been trained in one or another of the three lines; most of them gathered under their jurisdiction all the existing activities, adding to them the administration of the machinery of joint relationships—employee representation, union contracts, individual agreements or the like—that were adopted in their companies or seemed advisable in the circumstances.

And the circumstances were influenced largely by industrial and labor conditions during the war. To many a harassed employer, it must have seemed that the new methods of personnel management had been brought into being providentially, just in time to help him through the perplexities which beset him at his

mercilessly and their functions were cut down to the barest essentials. At this late date line executives probably will admit that many of their number in those days were not wholly displeased at the departure of "uplifters," and indulged secret or open hopes that they would not return.

And they did not return—not as uplifters, that is. Many of them did not come back at all. But a nucleus of practical labor administrators who had developed their functions on sound principles and by business methods stuck to their jobs or soon returned to them. Even in the worst of the depression forward-looking employers realized that good labor relationships were vital to business success and that they needed to be organized and guided by men with professional training and outlook.

DAILY contact with the responsible executive officers of the largest and most successful business corporations in America as an adviser on matters of personnel policy and practice accounts for the freshness and vigor of Mr. Cowdrick's ideas.

He is not a theorist. His practical experience in the coal industry, as well as other basic industries, enables him to face the facts of labor relationship with an open mind but with a keen appreciation of the value of intelligence rather than expediency in labor matters.

In subsequent articles Mr. Cowdrick will discuss employee stock ownership and other modern plans for improving employee-employer relationships.

every contact with employees. The industrial relations manager grew in power and prestige. Sometimes he had a staff of several hundred assistants. In some organizations he ranked as the head of a separate department, comparable to the production department or the sales department. And into the new profession flocked a small army of zealous neophytes, impelled by all sorts of motives and equipped with all sorts of preparation and experience—or lack of them.

With the business depression of 1920-22 came swift deflation of much that was unsubstantial in this development of personnel management. Under the lash of financial necessity many industrial relations departments were abolished. Others were pruned

WITH the revival of business labor management again began to advance. It came to be recognized that harmony and co-operation within the company organization was "good business"—and it was largely on that basis that enlightened methods of personnel administration found their justification. Today the personnel director has won his way into the confidence of industrial management and occupies a position from which he is not likely to be dislodged.

But this position is not precisely the same as that to which many industrial relations managers aspired during the period from 1914 to 1920. It has come to be realized that the once prevalent practice of setting up the labor organization as a distinct executive department, largely independent of the officials responsible for production, was based upon a mistaken philosophy. Business managers and industrial relations men now agree that labor administration is a part of general management and that the responsibility for carrying out labor policies rests with the same



people who are charged with the duty of getting out production—the line officials.

The industrial relations specialist, under whatever title, is likely to have relatively few executive functions and to occupy a "staff" or advisory position in the company organization.

**I**F IT is agreed—as it now is almost universally—that labor maintenance is primarily a staff function,

relations director is likely himself to be the head of a staff of tolerably impressive numbers and qualifications. For labor management, at the same time that it has become professionalized, has followed the lead of other professions in being divided up into a number of distinct specialties. A fully manned industrial relations department is likely to include a safety engineer, a physician (himself perhaps the head of a staff), an employment

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**B**USINESS managers and industrial relations men now agree that labor administration is a part of general management, and that the responsibility for carrying out labor policies rests with the same people who are charged with the duty of getting out production—the line officials.

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with only secondary and minor executive duties, a question naturally arises as to the exact place of the personnel director in the company organization. Since he is a staff man, to whose staff does he belong? Here there is a sharp difference of opinion. In some companies the industrial relations manager reports to the president or to the chairman of the board of directors. In others he is attached to the operating department and is supposed to have no official contacts with executives outranking the production manager. In still others he is somewhat loosely attached to a vice-president or thrown into some department that has become a catch-all for unclassified functions.

In support of the policy of attaching the personnel director to the staff of the production manager it is argued, with a show of reason, that since labor relations among plant employees are a part of production management the adviser on this subject should be directly subordinate to the responsible executive. Equally convincing, however, is the contrary argument that the labor policies of a corporation should be laid down by its highest executives and that the counsel of the industrial relations specialist should go primarily to the president or to the board of directors. Choice between these conflicting theories properly rests not in the realm of academic arguments but in that of practical conditions and personalities. The best policy for a particular company is the policy that works.

In his position as counselor to the operating executives, the industrial

manager, an educational director, an administrator of pensions and insurance, and a director of service and housing, in addition to the administrator of mutual relationships (employee representation, union agreements, or whatever else exists in the particular company), who usually is the industrial relations director himself. Some of these functions can be combined, and especially in smaller organizations the personnel manager often assumes responsibility for several of them.

**I**N A company that has several plants the industrial relations organization is further complicated, since it is necessary to carry on labor activities at each unit. Generally there is a personnel director at each plant, reporting to the manager or superintendent, but with a close working understanding with the central industrial relations organization. The plant personnel director may have one or more subordinates, heading up as many separate functions as there seems to be need of segregation. Thus there usually is a plant safety inspector, a plant physician and an employment manager. Sometimes other specialties are intrusted to separate individuals. Particularly in a plant of moderate size the duties of several of these positions may be assumed by the personnel manager himself. In this sort of arrangement, however, there is risk that the divisions of work with which the personnel manager is least familiar will be neglected. He scarcely can be an expert at all of them.

**T**HE functions we have been discussing are all parts of the job of labor management. They are closely related and belong properly in a single organization. There is another function, however, not precisely a part of industrial relations, with which the personnel director sometimes finds himself closely connected. This is the function of public relations. In some companies, indeed, industrial relations and public relations are supervised by the same man. In others they are carried on by separate departments. In all companies, however, there should be a close co-operation between the labor manager and director of public relations. Their duties and responsibilities are so closely related and their points of view ought to be so similar that the closer their association the better it will be for their employer.

To perform the duties we have outlined the industrial relations manager naturally needs specialized qualifications. As we have indicated, labor management has become almost, if not quite, a profession. But it is not a profession based upon scientific knowledge or standardized training. In fact, some of the most essential qualifications are so intangible that they are difficult of classification or description.

At the very outset it should be clearly understood that the labor manager cannot be expected to have intimate knowledge of all the various specialties coming under his general jurisdiction. To qualify as a competent safety engineer or employment manager or industrial educator is job enough for one man; he cannot expect to become expert in each. Usually the successful labor manager has had practical experience in one or, at most, two or three of the functions coming under his jurisdiction and contents himself with a somewhat general knowledge of the others. If he has come up through the employment department, for example, he usually does not pretend to be an expert in safety. Naturally the position of industrial physician is in a class by itself, although it should be noted that several industrial physicians have assumed direction of industrial relations programs with outstanding success.

In addition to having a knowledge of labor management, the industrial relations director ought to be versed in economics and in business principles. He ought, in particular, to have a good working knowledge of his employer's business. This does

not mean that he should be a technician. The personnel director of a coal company, for instance, does not need to be a mining engineer. He ought, however, to understand the rudiments of his industry, especially as they affect the working conditions of the men employed in it. He should have some knowledge of the history and traditions of the industry and be able to make allowances for their influence upon the views and prejudices of workers and officials.

Whatever other qualifications he may be able to get along without, one which the labor manager cannot spare is an understanding of human nature. Human beings, with all the endlessly complicated reactions of their minds and emotions, are the material of his daily work. If he cannot understand them his case is indeed hopeless. This knowledge of human nature, vital as it is, is not necessarily dependent upon any one kind of experience. It may have been acquired in the shop or the mine; if it has, so much the better. But it may have been acquired just as successfully in the office, the country store, the classroom or the pulpit. It is the thing itself that counts, not the specific method of its attainment.

But a man may understand human nature and yet be a cynic. He may have gained his knowledge by cold-blooded observation, studying humanity as the entomologist studies the bugs under his microscope. This is not the attitude toward human nature which makes a successful industrial relations man. He needs not only to understand humanity but to take a genuine interest in his fellow men. If he cannot learn to do this it were better for him to choose some other profession.

**T**HE labor manager in the course of his work is brought constantly into contact not only with workingmen but with company officials, his associates and superiors. In these contacts he has need for both courage and diplomacy. He needs to know when to stand fast and when to give ground. If he is a "yes" man he is next thing to worthless. If he is stubbornly opinionated, he often loses his cause through lack of willingness to make adjustments. A nice balance is needed between firmness and compliance, and upon this balance depends often the success of the whole industrial relations program.

However eminent his qualifications in other respects, the industrial relations director has more than an even

chance of failure if his personality does not inspire confidence and help to sell his policies to workers and officials alike. It sounds cruel to say that a man, well trained and with good intentions, may fail for lack of personality, but nothing is to be gained by dodging an unpleasant fact.

Even more important than personality, if that is possible, is character. The industrial relations director is constantly under the scrutiny of men and women who often are predisposed to suspect the sincerity of his motives. Once caught in duplicity or deceit, it may take him years to recover his influence over the workingmen. The insincere personnel manager may "put something over" on labor once—but after that he had best look for a job in a distant field.

**H**AVING thus outlined some of the more essential qualifications of the industrial relations manager, we naturally face next the question: Where are we going to get him? Industrial relations directors in the past have come from various sources. Some of them have worked up from the ranks of laborers in the companies by which they are employed and have filled various positions including perhaps high executive offices. Others have been brought into the industry from various other callings,

a healthy tendency and is to be encouraged—always provided that the employee selected is really qualified.

**I**T SHOULD be remembered that labor management is a highly specialized form of service, approaching professional status, and that there is no reason to suppose a man is capable of performing it simply because he has been a faithful employee in other lines of work. If you were establishing an engineering department you might find a man among your employees who was capable of being chief engineer. If you did, you would be entirely justified in putting him on the job; but you would scarcely select some foreman or superintendent, regardless of his qualifications, and install him in the position simply because he was faithful and diligent—or because there was nothing else in particular for him to do. Rather than this you would go outside, if necessary, and hire the best qualified man you could afford. The same principle applies in selecting a manager of industrial relations.

Sometimes employers seek to combine the advantages of specialized training and service in the plant by hiring young men, preferably college graduates, giving them an intensive plant experience, and then transferring them to the industrial relations

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**T**HE industrial relations specialist, under whatever title, is likely to have relatively few executive functions and to occupy a "staff" or advisory position in the company organization. In this respect his status somewhat resembles that of a chief chemist, a chief engineer or any other official who renders a technical and professional service but whose suggestions are carried out through the regular line organization.

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after having received a greater or less amount of training for their new work. As a matter of fact, some of the most successful industrial relations men have gone into personnel management as a profession without previous experience in industry.

Of late there has been a tendency, as far as possible, to develop personnel directors within the organizations in which they are to work. An employer is likely to prefer a qualified man, if he can be found, from among his own employees rather than to hire a specialist from the outside. This is

department, at first in minor positions. This is perhaps as satisfactory a method as can be adopted in a company that already has a personnel department established and functioning.

The employer first establishing industrial relations work, however, unless he is fortunate enough to have an exceptionally qualified man somewhere in his own organization, is likely to find it most advantageous to spend a little time in hunting out the right one than to launch a program under incompetent guidance.



# LUBRICATION ENGINEER

## *Lessens Dependence On Repair Shop*

By *R. M. Gordon*

*Lubrication Engineer,  
Pittsburgh Coal Co.,  
Pittsburgh, Pa.*

**A**LUBRICATION ENGINEER is an innovation in the coal world. Industries in general have recognized his importance before, but until very recently the coal industry has been content to use black oil promiscuously and let the repair shops do the rest.

It is perhaps due to several of the more progressive oil companies, which, as an aid to selling, have instituted better lubrication practice that we are indebted for the first steps toward efficient lubrication. Now the coal companies themselves, having seen the fallacy of the black-oil system, are continuing the good work by having their own lubrication engineers.

The work of the lubrication engineer might be divided into four general phases: (1) Selection of lubricants; (2) their handling and storage; (3) their application; (4) the keeping of records and the computation of cost-per-ton sheets.

In order to select the proper lubricants the engineer should have a knowledge of their composition and properties, as well as a thorough understanding of the equipment and the different working conditions encountered.

**T**O THE layman, grease generally is considered grease, and oil, oil, with no consideration given to their origin or to the degree or methods of compounding—yet it is these properties which determine the suitability of an oil or grease for particular applications. Lubricants of various densities are required to properly oil modern equipment because of the many different types of machinery in use and the widely varying operating conditions under which they are employed.

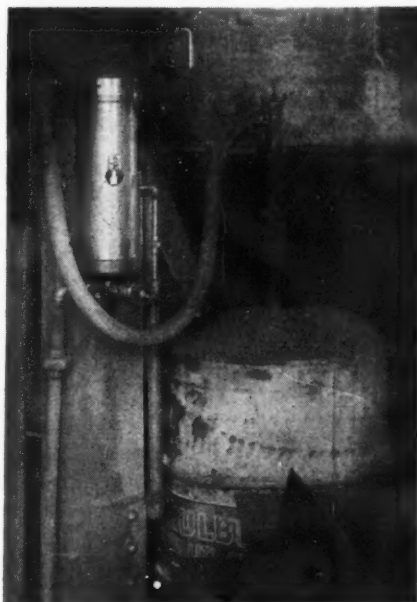
The second duty of the lubrication engineer is to see that the lubricants

are properly stored and dispensed. An oil house of suitable size, equipped with heat, should be built at each plant. This house could be a unit in itself or a part of the supply house.

Full barrels should be racked on stationary racks adjacent to the oil house. The racks should consist of runners of rail or angle iron bolted to uprights secured in concrete. The racks should be so located that the barrels can be conveniently rolled on skids into the oil house. Each mine should have from three to six racks, depending on the number of lubricants used.

One barrel of each lubricant should be kept in the oil house and should be fitted with a suitable pump. When this barrel is emptied it can very easily be rolled out and the pump placed in a full drum taken from the adjacent rack. This method is much simpler than the more common one of first dumping the lubricant into a one- or two-barrel container

*Pump It; Don't Dump It*



fitted with a pump, and involves less waste. The oil house should be kept under lock and key at all times and all of the lubricants should be dispensed by one man, who can then be held responsible for the condition of the house.

**T**HE application of the lubricants, of course, is the most important of all. The common method of lubricating cutting machines is with a spout oil can. A more recent development is to introduce the lubricant through a manifold system. This largely eliminates waste and dirt and assures positive lubrication as the lubricant is applied with a pressure gun.

Lubricating mechanical loaders has been somewhat of a problem because of the high heat developed in the friction clutches and armature bearings of the loading machine.

Locomotives are very effectively lubricated with journal boxes and axle caps packed with a preparation of horsehair and wool waste. The horsehair improves the wicking qualities and prevents the waste from packing excessively and getting away from the journal. The lubricant is applied by means of a pressure gun. Plain-bearing armatures are treated in the same way. Roller-bearing armatures are lubricated with a neutral, medium-density grease.

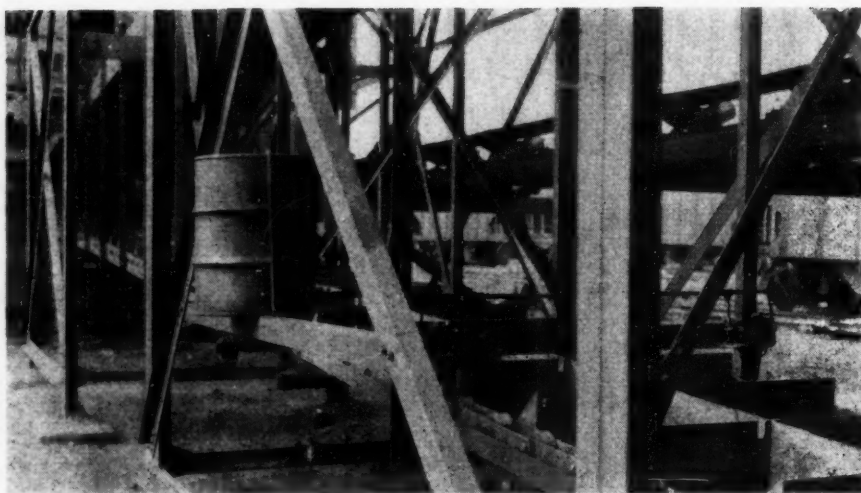
Roller-bearing mine cars are lubricated periodically with a high-grade, medium-density cup grease. A very satisfactory method of applying this grease is with a hand-operated pressure gun, pumping the grease direct from the drum to the wheel, discharging  $\frac{1}{2}$  lb. per stroke. Another method employs a motor-driven pressure gun, of which there are several on the market.

**P**LAIN-bearing mine cars are best lubricated with a fluid grease the proper density of which depends on the condition of the equipment. The

grease is easily applied with a hand gun. A 3-gallon container with pump attached, forcing the lubricant through a short length of hose fitted with a rubber cone to prevent waste of grease due to back pressure, is being used extensively. Numerous mechanically operated greasing devices also are available.

The lubrication of tippie machinery presents many application problems. The usual method of lubricating the pan-type of conveyor is with a spout oil can or through a pipe leading from a storage tank regulated by a valve, allowing the lubricant to drip on the roller. An improvement over these methods is an automatic device controlled by a trigger that is tripped by the roller and so arranged that a few drops of the lubricant are discharged onto the bearing. This method is very economical and assures constant as well as correct lubrication.

Rollers of the belt-conveyor type are effectively lubricated by means of a pressure gun. There are several methods employed in the lubrication of the many plain bearings found throughout the tippie. Spring-compression cups, filled by means of a pressure gun, are a big improvement over the old hand-actuated type. A more recent development is an automatic pressure system that feeds grease from a central magazine through header lines to regulating valves which control the feed at each bearing. These regulating valves may be so adjusted as to feed an almost infinitesimal amount of grease, which in most cases is ample, thus effecting quite a saving in the amount of grease used. In addition



*Trip the Trigger, Oil Automatically*

it reduces the human element to the mere filling of the magazine, which is best accomplished by pumping directly from a barrel by means of a hand gun, and assures positive, constant lubrication.

It is often advisable, particularly in the case of a bearing encasing a shaft which has a fairly high r.p.m., to effect lubrication by means of a bottle or wick-feed oiler. Several good types of each are available and they offer a simple means of supplying constant and positive lubrication.

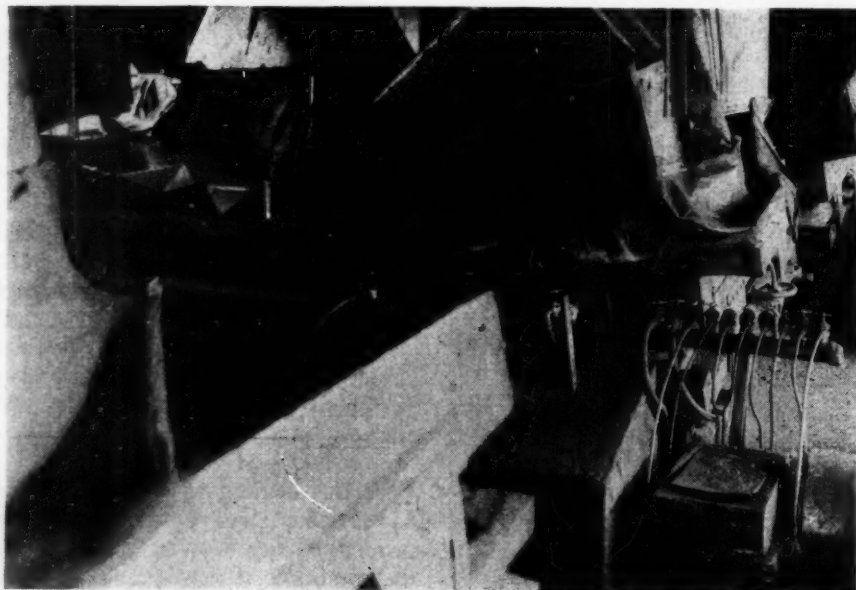
The efficiency of air compressors is very often impaired by improper lubrication. Force-feed lubricators are generally employed, and only a very small quantity of lubricant is required. The selection of the lubricant is very important in a compressor, due to the necessity of keeping the valves free from carbon and at the same time providing the nec-

essary piston seal. Air tools are very economically and effectively lubricated by introducing a few drops of atomized oil into the receiving line. Here again particular care must be taken in the selection of the oil as the wet air in the line is likely to cause emulsions.

The fourth part of the lubrication engineer's work is the keeping of records. A convenient way is to keep a card index of all lubricants ordered and received at the mine. Then if a monthly inventory report is sent in from the mine the quantity of lubricants used can be accurately computed. Cost sheets should be made out semi-annually showing the cost of lubrication per ton of coal produced.

While it is possible that one versed in the nature of lubricants can effect savings in their selection the big economies brought about by the lubrication engineer are the power savings incident to the reduction of frictional resistance, and the elimination of much of the shut-down and repair time caused by faulty lubrication.

*Manifolding Excludes Dirt*



## SCRAPER LOADING

### Speeds Development at Commodore Mine

*(Continued from page 531)*

results from the concentration of effort and machinery.

All equipment is constantly at the place where it is to be used and no loader is forced to share its machinery with another part of the mine. Efficient gathering also results from concentration, as there are more loaded cars to be gotten at fewer stations. In view of these facts an excellent rate of entry driving is a natural outcome.



# Timber Treatment Plants

## *Where and How to Operate Them*

By L. D. Tracy

Consulting Engineer  
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IN THE July issue of *Coal Age* I discussed the necessity for timber preservation under the title "Sizing Up the Timber Preservation Problem," pp. 411 - 413. The subject of this article is, what

kind of plant or plants shall be built. When companies have a number of scattered operations it is difficult to decide just what shall be the location of their plants and how many of them shall be built. Some of the points which should be carefully studied are:

(1) Whether to erect one large central treating plant which will take care of all classes of timber or to establish a smaller central plant which will treat only the larger sizes, leaving ties and other small material to be treated at still less pretentious plants located at each mine. In this connection it should be remembered that in a modern mining operation much of the timber that should be treated is used above ground, namely, power and telephone poles, tippel lumber, trestle timber for outside haulage systems, sills and caps for buildings, fence posts and possibly railroad and mine-car material.

(2) The location of a central plant

in relation to freight rates on timbers shipped in, treated and then shipped out to their final destination, and the possibility of obtaining the "treating-in-transit privilege." Unless that privilege is granted the full local freight rates will be charged both from the original shipping point of the timber to the treatment plant and from the plant to the mine or wherever the timber is to be used. After the transit privilege is granted the through freight rate from the original shipping point to the final destination will govern despite the unloading of the timber for treatment, its reloading and reconsignment.

(3) The size of a central treating plant to meet the normal demand for treated timber. When the plant is first placed in operation, the demand upon it will, no doubt, be greater than it will be several years later, because it must supply timber not only to protect new and advanced workings but also to replace the material in the older workings as it decays.

As the untreated timber is gradually replaced with treated timber, the volume of replacements will grow less until the plant will be obliged only to keep up with the normal demand for treated timber occasioned by new development with an occasional replacement. Therefore much study should be given to the capacity of the proposed plant, because it might be more economical to plan for the eventual

output than to build a plant based on the combined demand both for newly placed timber in advancing workings and for the replacement of old timber. The additional load due to the need of replacement timber, which might last a few years, could be met by running the plant for two or three shifts per day, reducing the working time as the demand lessened.

(4) The routing of material from the green log to the finished and treated timber should be carefully planned. This includes storage and seasoning yards, framing mills and treatment plant. The utilization of waste from the framing mill may effect a large saving.

A COMPANY in western Pennsylvania practically paid the cost of operating its framing plant by turning the slabs, ends and narrow strips cut from the logs into usable material. The logs as they came from the woods were first slabbed and then cut into boards and timber of standard size. The slabs and trimmings were cut into narrow strips which the company used in the construction of its houses and other buildings. The short ends which came from cutting boards and timbers into standard lengths were made into caps and wedges and were used in the company's mines or were sold to other mining companies.

It sometimes happens that a num-



ber of individual mining operations are controlled by one parent organization, either by stock ownership or by the lease of the coal or ore. In such cases the organization of an independent unit for the purpose of buying, seasoning, framing and treating timber and selling it to these individual mining units might be advantageous. This was the procedure in one instance and appeared to be operating successfully. The treatment plant was strategically situated in respect to the mines which it supplied, and the advantage of "in-transit" freight rates was obtained. All timber operations are under the supervision of an engineer who reports to the executive head of the parent company.

Such an organization is well worth considering where there are a number of mining operations which are independent of each other, but which are controlled by a common interest. When a number of mines are to be supplied from one treating plant, the sizes of ties, drift or entry timbers and other treatable material should be standardized as far as possible, because a stock of ties and timber should be carried for proper seasoning and because a supply of treated ties and timbers must be held in reserve in order to fill requisitions.

**C**ONSEQUENTLY, the fewer the sizes to be kept on hand, the smaller the investment tied up in a reserve timber supply. For example, one mine may use 5-in. x 5-in. x 5-ft. ties, another 5-in. x 6-in. x 5-ft., and still a third 6-in. x 6-in. x 5-ft. ties. Yet any one of these three sizes would be entirely satisfactory for all these mines.

Or it may be that it is the practice at one operation of a company to use 8x8-in. timber in the entry

*Underground View of Treated Legs; "X" and "15" in Use Since 1908*

sets, whereas an adjacent mine of the same company may use 6x8-in. timber for the same purpose, and a third mine prefer 6x6-in. timbers. It might be possible to adapt a common size to all these mines, and thus save purchasing three times as much timber as is necessary to maintain a proper reserve supply.

The accompanying table shows the quantity of reserve timber which was kept in stock at a mine with a daily capacity of 1,500 tons of coal. The roof was exceptionally bad and the overburden heavy, so that the demand for timber was much larger than in most mines. All the timber used was round and of a diameter averaging about 14 in. All pieces mentioned in the table were treated. In addition, a supply of untreated timber was kept at the sawmill, which was near the treating plant.

**C**O-OPERATION is absolutely necessary for the complete success of such a plant. I have in mind one that cost about \$50,000 and is under the supervision of a specially competent engineer. His whole work is said to be hampered because the official who purchases timber does

not believe in these "new-fangled" ideas and will not provide the plant with enough mine ties and timber to enable it to do its best work. For this reason a \$50,000 investment does not earn its interest.

In the light of the above mentioned instance it would seem to be the best policy to have all operations having to do with timber under one head, and he in complete sympathy with the practice of treating timber.

He should be given also a certain degree of authority over the timbering gang in the mines because much of his effort toward lessening the cost of timber may be nullified by improper handling when the timber is being put into place. Over this handling he may have no control, although the management looks to him for results that will justify the installation of the treating plant. He should have the right to require that the treated timber be cut as infrequently as possible, and when such cutting is unavoidable he should have authority to order that the exposed surfaces be thoroughly painted with a proper preservative. All mine foremen, timbermen and trackmen should be instructed as to the need for keeping the toxic seal of the preservative intact as far as possible.

The timber department, if such an authority exists, or if not, then some responsible person should keep accurate and detailed cost records of timber treatment together with the type, method and date of dosing of each timber and when and where installed.

**S**OME cost data have been found which were based on a square foot or linear foot unit. This is not a fair basis of comparison. It will cost less to treat a wide, thin board than to treat a 6x6-in. timber having the same number of square feet of surface. Similarly, a stick of 6-in. diameter can be treated at less expense than one of 12-in. diameter where both are of the same length. Yet the

*Reserve Treated Timber Supply at Mine of 1,500 Tons Daily Capacity*

Date	Sets Special Treated Timber*	6-Ft. Special Legs	7-Ft. Special Legs	8-Ft. Special Legs	9-Ft. Special Collars	10-Ft. Special Legs	10-Ft. Special Collars	11-Ft. Special Collars	11-Ft. Special Legs	5-Ft. Ties	41-Ft. Room Ties	8 Ft. Special Collars
1923												
Jan. 1	109	..	..	..	..	..	..	..	..	690	..	..
Feb. 28	90	..	..	..	..	..	..	..	..	352	396	..
Mar. 31	83	..	..	..	..	..	..	..	..	57	257	..
April 30	..	..	37	..	..	..	..	..	..	146	247	70
May 31	..	..	31	..	..	..	..	12	8	..	..	96
July 1	..	3	49	15	31	14	..	8	..	..	..	..
Aug. 1	..	..	36	5	130	11	..	8	..	..	..	..
Sept. 1	..	..	89	3	15	..	2	..	12	..	..	..
Oct. 1	..	..	109	3	30	..	..	..	..	..	..	..
Nov. 1	..	..	177	..	69	..	..	..	..	..	..	..
Dec. 1	..	..	192	..	74	..	..	..	..	..	..	..
1924												
Feb. 1	..	..	98	42	..	..	64	..	..	..	..	..

\*One set special timber consists of two 7-ft. legs and one 8-ft. crossbar of an average diameter of about 14 in.



number of square feet in the first two cases are equal and the number of linear feet in the two latter cases are the same.

Thus far, the cost of treatment calculated upon the number of cubic feet of timber treated seems to be the fairest cost unit for comparison, and it is recommended that all cost data be kept on that basis.

Mine-timber preservation will effect economies in any mine where conditions favor decay, provided there is enough timber to justify treatment. In this calculation only timber needing to be permanent and unlikely to be destroyed prematurely by pressure or mechanical wear should be considered. It is doubtful whether timbers for temporary support or ties for non-permanent tracks should be treated. Each case needs study in relation to local conditions.

**I**T ALSO is questionable whether the money spent in treating a few timbers and placing them at random in the mines without regard for the service required of them is well spent. It surely is a waste if they



*Edge of Mine Cave-in Showing Effect of Pressure*

the practice of timber preservation in order to determine what economies, if any, may be expected.

(2) To successfully and economically treat mine timber a thorough investigation should be made of each individual mine to find out what percentage of the timber used could be

that the load which the plant will have to carry will be greater at the beginning of its operation, and then as the replacements are gradually made and the old timbers are reduced in number the demand on the plant will lessen until it reaches normal; the mistake of constructing too large a plant should not be made. It probably would be better at first to run the plant two or three shifts per day, and then to decrease the number of these shifts as the call for replacements lessens.

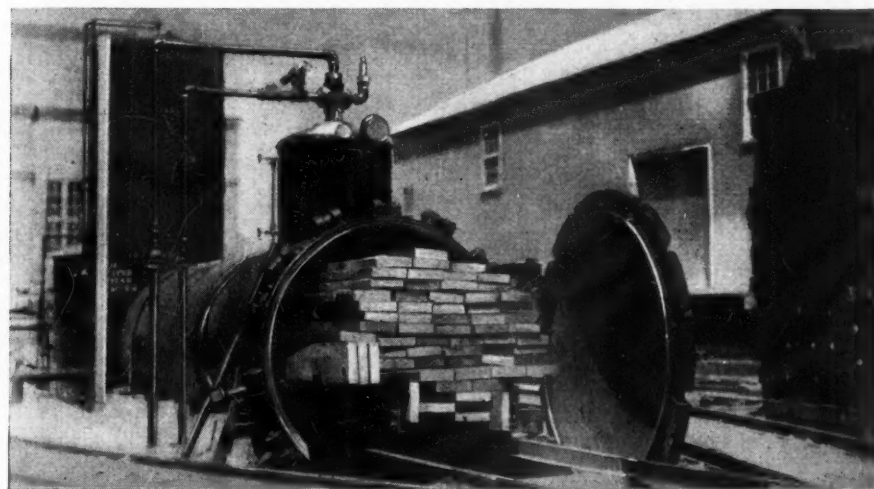
(3) If any saving is to be effected by the use of treated mine timber it will be done only by continuous practice, systematic control and proper preservative methods. Some of the more superficial of the treatments, however, may be better than no treatment, but, even so, these must be systematically made and continued if any permanent success is to ensue.

(4) Complete and cordial co-operation must be maintained between the purchasing, operating and executive departments. Lack of interest in any one of these branches may seriously interfere with the efficiency of any treatment plant.

(5) The mistake must not be made of expecting immediate financial benefits from the use of treated timber. Such benefits will not reveal themselves for several years or until a large part of the decaying timber has been replaced. Then the timber cost should drop in a marked degree.

(6) The possibilities of the substitution of a cheaper grade of timber which has been properly treated for the more expensive untreated timber should not be overlooked.

Some one has said, "If a thing were well worth doing, it were worth doing well," and in no place can this saying be better applied than in the treatment of mine timber.



*Charge of Lagging Being Placed in Treating Cylinder*

are placed in a location where they are sure to be crushed before they would be weakened by decay or if in placing them they are cut and hacked so that the effect of the treatment is nullified. The preservation of timber at the mines should be taken as seriously as the ventilation or the haulage system.

Summing up what has been said, therefore, the following fundamental principles may be laid down relative to the successful operation of a mine-timber treatment plant:

(1) The use of properly treated mine timber, under certain conditions will save money. These conditions should be studied by one familiar with mining conditions and also with

economically treated. Included in this estimate should be such surface timber as power-line poles, telephone poles, building lumber, railroad-track ties, fence posts and outside-haulage trestle timber. If a wooden tippie is in use, any new piece of timber embodied in it also should be treated.

**W**HEN these figures are obtained the average life of the untreated timbers in the mine should be determined as accurately as possible, and upon this data the type and size of the treatment plant may be determined. In making these plans it would be well to remember



# Going 50-50 With the Men

## *In Promoting Good Will*

*By J. H. Edwards*

*Associate Editor, Coal Age*

**F**AILURE of employees to appreciate comforts and advantages gained without sacrifice has discouraged some of the mine owners who have been willing to invest additional funds in better living conditions for their men. This applies particularly to those mines so situated that the company must provide all of the housing facilities.

At such mines the employees' attitude is that the company has a paternal duty in supplying those extra advantages which might be classed as "not positively necessary." The company receives no thanks for the improvements, but instead is criticised for not going still further.

This undesirable paternalistic attitude is combated successfully at the Nellis (W. Va.) mine of the American Rolling Mill Co. by the activities of an association of employees. This was organized in 1922, when the mine started non-union, and is named the Armco Association.

Charles W. Connor, general superintendent of mines, is already enthusiastic over the value of the

association. "It is the finest thing I have ever seen. It gives the men a chance to take a part in the community problems and it gets away from the paternalistic idea."

E. H. Shriver, superintendent of the Nellis mines, has been in contact with the association practically since its inception. He also thinks very well of its activities and results. "As a superintendent I wouldn't be without such an association. I have been one of the directors for five years."

**T**HE object of the association, as set forth in its constitution, is "to afford relief to any member who, while in the employ of the American Rolling Mill Co., may, through sickness or injury, be rendered incapable of performing his duty; to enable him to avoid the necessity of appealing to his fellow workman for aid, and also to promote the general welfare of its members and to bring them into closer and friendlier relationship."

Employees automatically become members of the association on enter-

ing the service of the company. For each dollar collected from the membership the company contributes an equal amount.

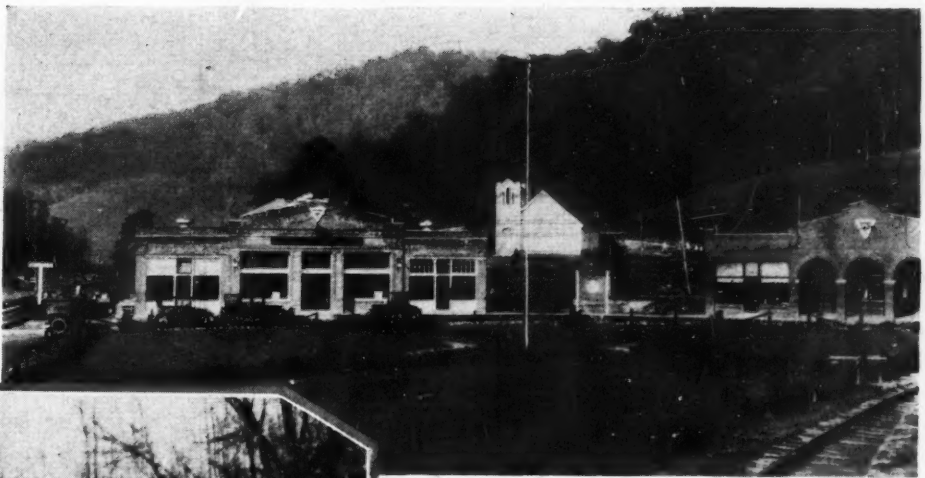
In addition to the sums paid as sickness and death benefits considerable money is expended for civic improvements. All but \$1,000 of the funds which erected a splendid church were contributed or arranged for by the association. The company erected a modern bath house but the association pays the attendant.

Even the schools receive a share of the funds. This expenditure is added to the regular teachers salary fund with the object of making it possible to obtain more competent teachers.

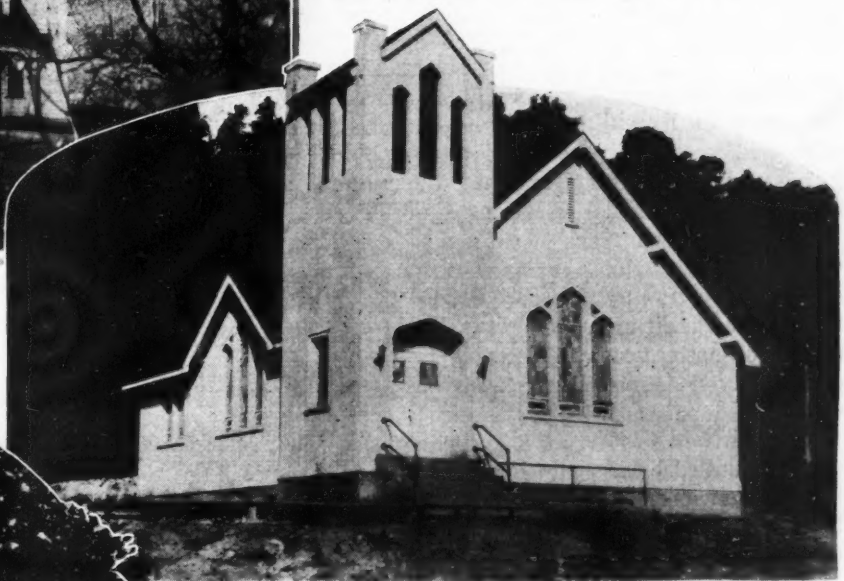
So it is, the association funds go for benefits, bath house attendant, to the school system, church, and so on, but the good does not stop here. Contact at the meetings promotes better acquaintance and fellowship, and affords an opportunity for the furtherance of safety. All these play an important part in reducing the labor turnover.



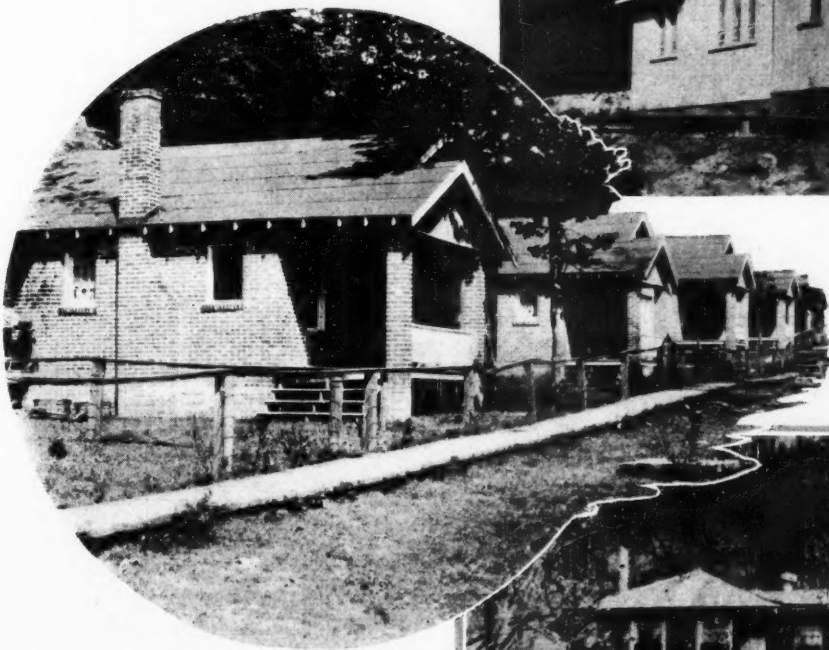
*Park and Community Center—  
Company Office and Store at Left,  
Recreation Building at Right*



*Two of the Official Houses*

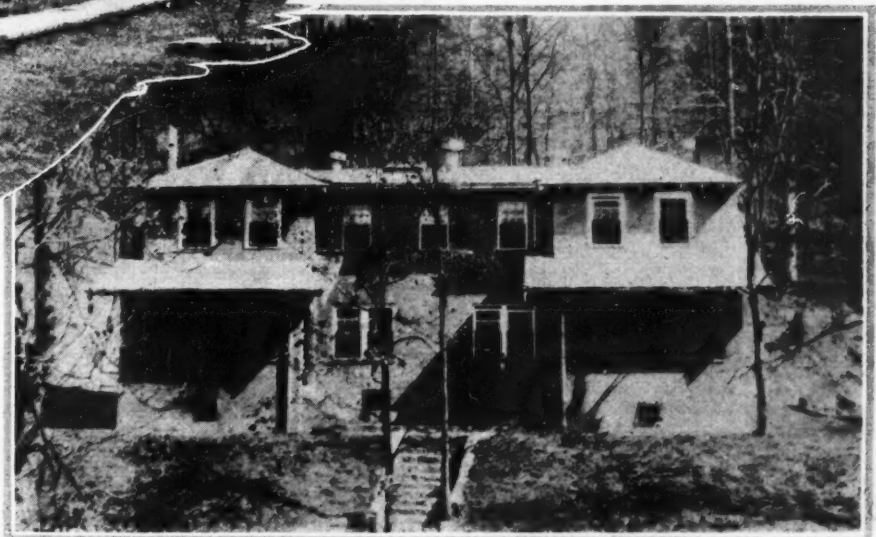


*Close-Up of the Church*



*Row of Cozy Brick Cottages*

*Club House Overlooking the Town*





*Office Building of Bell & Zoller Coal & Mining Co., Zeigler, Ill.*

## *NEW BOTTOM EQUIPMENT*

### *Enlarges "Bottle Neck" at Zeigler No. 1*

**S**UNK 24 years ago; the oldest mine in Franklin County, Illinois, and yet the second largest in the world—that is Zeigler No. 1 of the Bell & Zoller Coal & Mining Co. But this leadership has been maintained only by making changes from time to time in methods and equipment. The latest improvement was a change of bottom arrangement which cut off seven men and increased the capacity 18 per cent.

The shaft is 400 ft. deep and the coal is handled by a steam hoist in a skip which carries an average of 9.25 tons. The peculiar design of the steel headframe is an earmark indicating the age of the mine. Cars averaging 4.1 tons are used.

Before the recent improvements fourteen men were employed on the bottom. Loads moved by gravity along the 2- to 3-per cent grade and after being uncoupled were tipped

two at a time in a rotary dump. The cars were controlled by spragging.

Loading the skip was done by manual control of a gate at the bot-

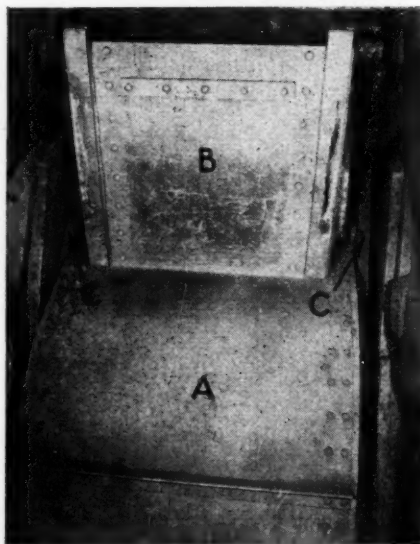
tom of a sixteen-car bin. Lack of load uniformity, spillage and the time required to load were objectionable.

The improvements consisted of applying swivel couplings to all of the mine cars, installation of a car retarder and of spotting dogs in front of the dump, changing the dump so as to bring its center of rotation in line with the swivel hitchings, and installation of an automatic skip loader which is of a new type.

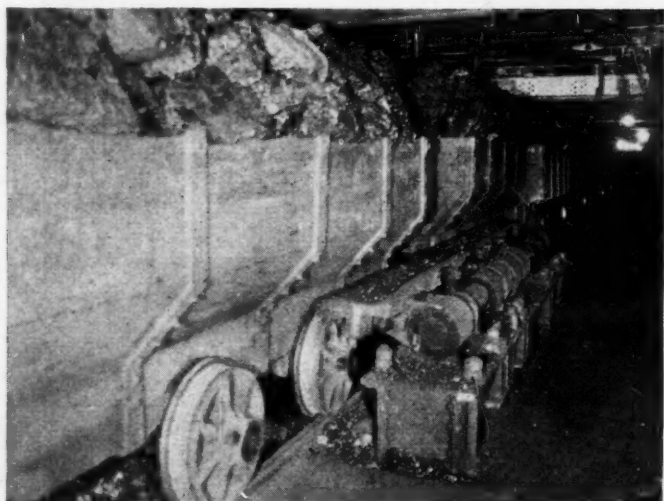
The car retarder is actuated by air working in a standard railway air-brake cylinder. The wearing plate, which is of sufficient length to span four car wheels at all times, retards the trip by pushing down on the wheel.

Breakage of several car wheels by this retarder when it was first put into use threatened to brand it as impractical. "We found, however," said W. P. Young, mine superintendent, "that only defective wheels

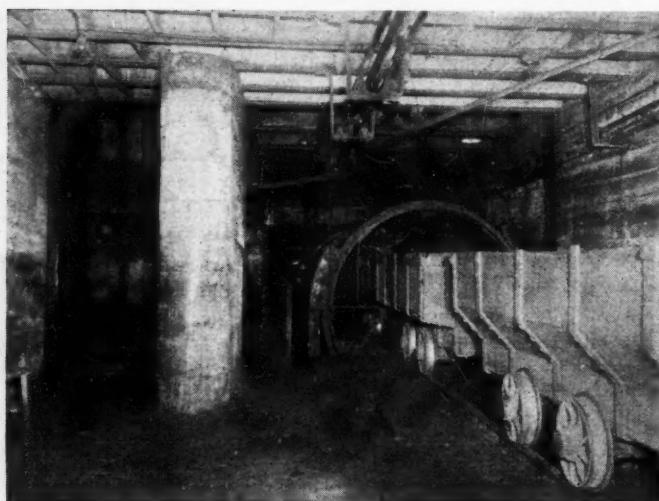
*Automatic Skip Loading Gate*



*Wheel Squeezer Retarding a Trip*



*Main Bottom with Man Cage at Left*



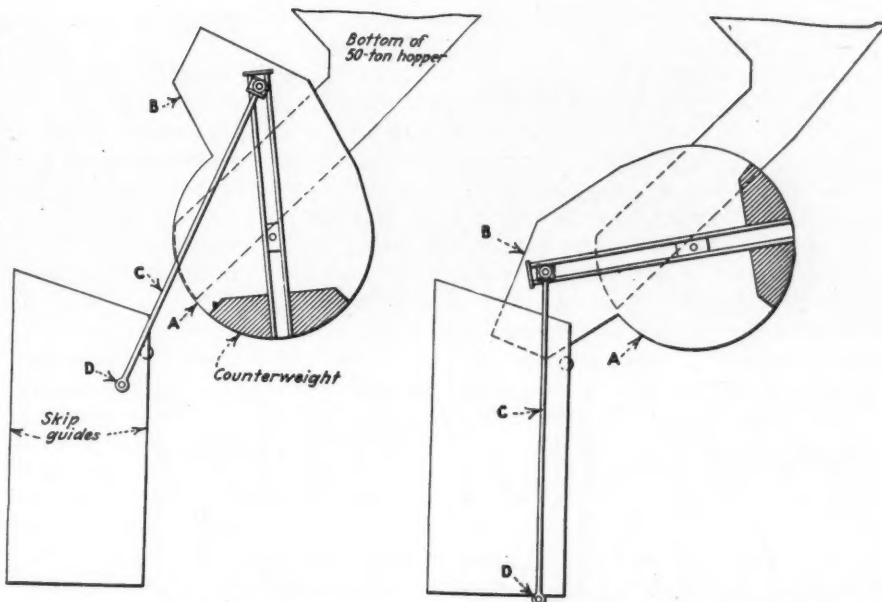


were broken and that it is better to have such wheels break at the shaft bottom where we are prepared to quickly replace the broken wheel than to have a break during haulage of a trip, causing a wreck."

The rotary dump also is actuated by air. It turns 150 deg. and back. One dumpman controls the car retarder, spotting dogs and the dump.

As indicated by the illustrations, the automatic skip loader consists of an undercut gate, *A*, having a chute *B*, and fitted with connecting rods, *C*, which are attached to a crossbar, *D*, upon which the skip lands. As the bottom of the skip pushes the crossbar down, the gate is rotated and the chute moves into the top of the skip and follows it downward.

Loading continues until the chute is choked by the coal in the skip. As the latter is hoisted the chute swings upward and backward out of the way, at the same time completing the loading of the skip. As compared to the old method, the new arrangement has the advantages of rapid and uniform loading, less breakage and no spillage. The gate and operating



*Schematic Diagram of Gate*

mechanism were designed and built by the Link-Belt Co.

Before the new bottom was installed the record hoisting was 9,100 tons in 8 hours of uninterrupted hoisting. After the change a new record of 9,335 tons was made, but this was

done in less than 7 hours actual hoisting time, and with seven fewer men working on the bottom.

Although Zeigler No. 1 mine has been in operation since 1904, it probably will break some more records before its decline begins. More coal remains to be mined than has been taken out.

## MODERNIZE Equipment To Cut Production Costs

*By G. L. Moses*

*Renewal Parts Engineering  
Westinghouse Electric & Mfg. Co.*

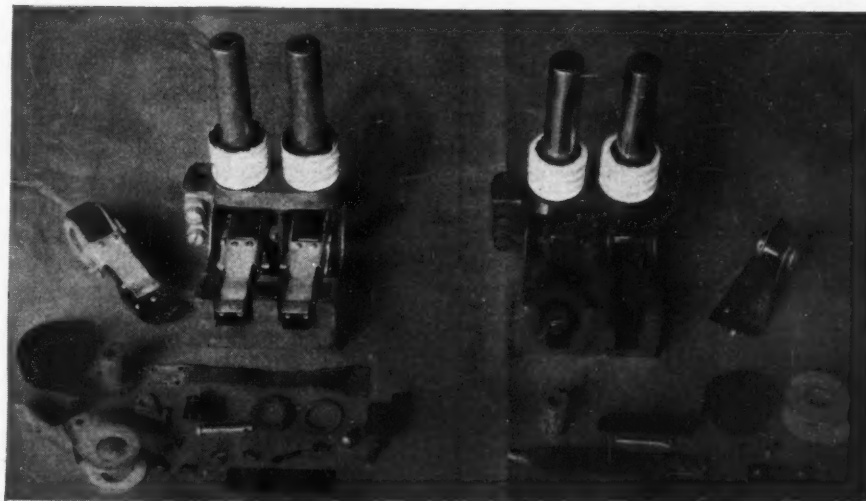
**H**OW can the coal operators save money and insure longer life of their equipment? Alert manufacturers answer this by recommending modernization of those parts that have been improved in design since the original equipment went into service. Through special engineering service modern assemblies and parts are now supplied that bring machinery up to date at small cost.

For instance, operators have found that modernization, by applying up-to-date designs, such as roller-bearing housings and compensating fingers, to their obsolete apparatus, results in a considerable saving in maintenance expense. By simply replacing the pinion end housing on some types of mining motors with the new design of roller-bearing housing, the operating advantages of roller bearings are obtained.

The helical spring or "compensating" finger is another excellent ex-

ample of a recent development which is equally applicable to both old and new drum controllers. The self-aligning feature of this type of finger

*Modified Brush Holder Requires Fewer Parts*



insures good contact and permits its operation with a reduced finger pressure, resulting in longer life of both finger and drum contacts.

The operating advantages of these recent developments can be obtained in the most economical way by applying these up-to-date assemblies and parts during the regular overhaul. At that time the apparatus is dismantled and it is simpler to install up-to-date parts than to repair and replace obsolete ones. Many progressive operators have incorporated modernization programs in their regular maintenance work. Such a program results in the gradual

change-over of the equipment. The operating advantages of the latest design and maintenance practice are thus obtained in an economical manner.

That modernization of electrical equipment results in improved service and a reduction in maintenance expense has been thoroughly proved by the experience of operators who report the following advantages: (1) Improved operation characteristic of modern apparatus; (2) increased life of the equipment and parts with fewer replacements; (3) decreased time out of production service; (4) standardization on modern parts with reduction in stocks; (5) less labor required to modernize than to remove, repair and replace damaged assemblies and parts; an actual saving results if the change is made at regular overhauling periods; (6) serviceable parts of the old design may be returned to stock for use

in maintaining equipment not yet modernized.

The cost of the modern assemblies and parts is partially offset by the value of the salvaged parts. This is particularly true where operators follow the usual practice of giving the maintenance department credit for salvaged parts returned to stock at their market value at the time of removal.

The gradual retirement from service of the older types of equipment naturally reduces the manufacturers' activity for parts for this equipment. This reduced activity increases the cost of duplicating obsolete apparatus and manufacturing parts. Obsolete apparatus and parts therefore are more costly than the corresponding apparatus which is in standard production. In most cases it has been found to be less expensive to purchase complete modern assemblies than replace parts of obsolete design.

## Keeping Coal Benches Separate Puts Plant on Full Time

By R. P. Maloney

Vice-President, Lindsey Coal Mining Co.,  
Oakland, Md.

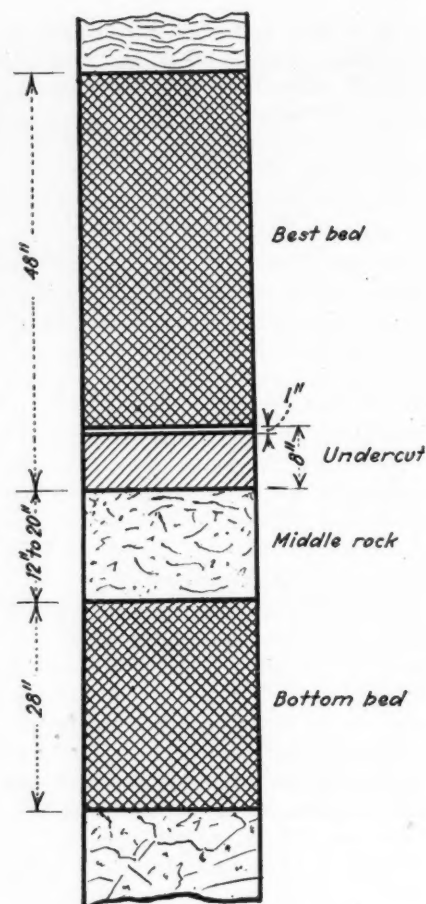
**S**PEAKING at the American Institute of Mining and Metallurgical Engineers, H. J. Rose, who makes chemical researches into coal and coke for the Koppers Co., of Pittsburgh, Pa., declared the coal from the various benches of a coal seam should in many cases be sold separately, the various products going to those purchasers who could use them to best advantage. There were not lacking those who believed that the coal man had troubles of his own without such finical methods of operation. In the anthracite region he is dumping coal from many different seams into a single car. Care is taken as to size but not as to relative characteristics. A low-fusing ash coal goes to market in the same car with one that fuses at a high temperature. The anthracite operator may be right and so may Mr. Rose's critics.

But, meanwhile in the little village of Corinth, W. Va., is a mine that is working every day and has been doing so for eighteen months, and this success arises from its practice of skimming the cream off the coal, sending the upper bench to a finical buyer who, being in New England, has a big freight bill to pay and is willing

to pay a larger price at the mine to get the kind of coal he wants. The rest is sold to those who want a good low-volatile coal but are willing to handle a larger proportion of ash. This involves some care and attention but it pays the company well.

This mine is the property of the Lindsey Coal Mining Co. and is located in Preston County, the boundary line of the mine being coincident with the state line between Maryland and West Virginia. To place the mine more exactly, it may be said that it is three miles from Terra Alta, W. Va., and eight miles from Oakland, Md. The mine is on the B. & O. R.R. and has the low freight rate east.

The mine at Corinth was opened 35 or 40 years ago in a small way and up to the present time only about 200 or 300 acres of coal has been mined. The seam has always been known as the Lower Kittanning but within the last year or two the state geologist declared that all the coal in the field that had been known as the Lower Kittanning was really Freeport and that what was termed the Upper Freeport in the Thomas (W. Va.) district is the Bakerstown coal, of the Conemaugh measures.



Middle Rock Separates Benches

Whatever it might be, the present owners when they purchased the mine did so knowing that the seam could not be worked in the way in which it had hitherto been operated because under that system the coal had acquired a bad reputation. Consequently, they had analyses taken of the different benches and after finding that the top bench could be mined so as to produce a coal having only 6 to 7½ per cent of ash they decided to reopen and electrify the mine, provide mining machines and electric locomotives and load only one bench of the coal. It was realized that it was the bottom bench, which ran high in ash and sulphur, that made the coal so difficult to sell.

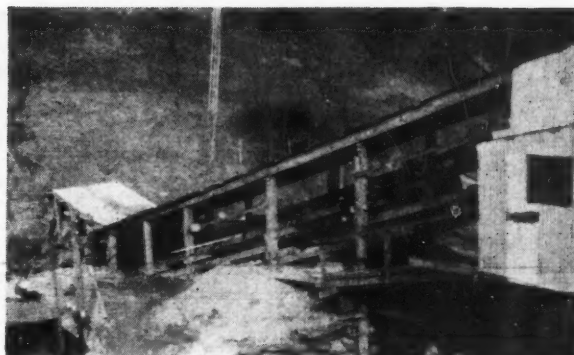
The seam consists of 28 in. of bottom coal, above which is a hard binder 1 ft. to 20 in. thick. Above this large parting is a 48-in. seam of coal also with a 1-in. binder which lies 8 in. above the large middle rock. This 8 in. of coal is not of good quality. The mining machines cut it out and it is loaded before the coal is shot down. It is dumped in separate railroad cars. It runs about 15 or 16 per cent ash and about 1.75 per cent sulphur. If left in the mine it might constitute a menace.

(Turn to page 547)



# QUALITY COAL

*Produced by  
Inexpensive Plant*



**T**HAT quality coal does not always necessitate or require elaborate underground and surface equipment is conclusively proved by an examination of the recently completed tippie of the Horner Coal Co., at Besco, near Fredericktown, Washington County, Pa. The new plant, which has been in operation ten months, has a potential capacity in excess of 125 tons an hour and replaces the old wooden tippie from which only mine-run was shipped. Cars were hauled to the old tippie by cable from a slope opening.

It is true that the coal mined here is not only remarkably free from slate, partings and sulphur but that the seam (Pittsburgh) also is quite thick—over 72 in. Consequently the problem of preparation and production is not so difficult as in many plants, and comparatively simple equipment can meet the requirements of the present-day market. This, however, does not alter the fact that the arrangement at the Horner mine appears to be well suited to the needs of the smaller operator who cannot afford a large capital investment per ton of output. Because of its unusual character it is believed that a step-by-step description of this operation will be of interest.

A gathering locomotive draws the mine cars from the rooms to a single entry, where they run by gravity to a kick-back dump located about 70 ft.

inside the slope mouth. The coal falls into a hopper from which it is delivered at a uniform rate by a reciprocating feeder to an endless belt conveyor; this feeder is operated from the lower conveyor roller. The conveyor, 36 in. wide and set on 179 ft. 6-in. centers, has a pitch of 18 deg. and runs on rollers equipped with pressure-lubricated anti-friction bearings. It is equipped with a belt take-up in the form of an idler pulley having balanced weights which act vertically. A brush on the belt return operates from the conveyor and removes particles of coal or damp dry dust which would otherwise stick to the belt. Wear on the bristles can be provided for by an adjusting device so that it will be in loose contact with the belt at all times.

**A**T THE top of the conveyor, if desired, the mine-run output can be passed directly to the right-hand track (see Fig. 1) by means of a vertical inclosed spiral chute. Under normal conditions, however, this chute is closed and the fine coal accumulates in a hopper and acts as a cushion for the coal discharged from the conveyor. From this hopper the coal passes over a bar screen 6 ft. long having  $3\frac{1}{2}$ -in. openings. The oversize coal from the bar screen passes by chute to a slow-moving apron-type picking conveyor. This conveyor is 4 ft. wide and 12 ft. long. It is op-

erated by a chain drive from the conveyors.

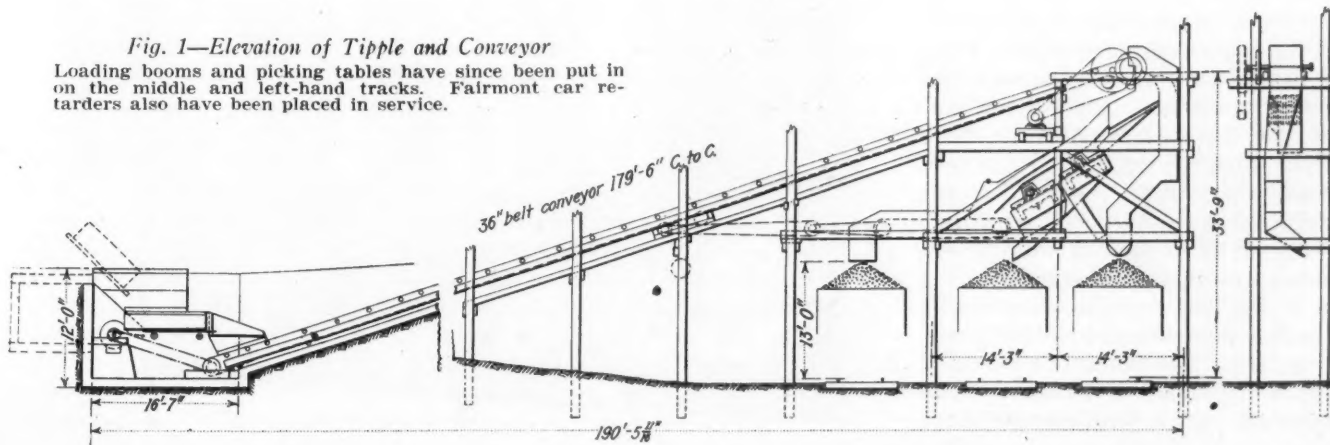
The coal from the picking conveyor is shipped as  $3\frac{1}{2}$ -in. lump. Slate and refuse from the picking conveyor is tossed on a platform from which it is shoveled into cars for disposal. The left-hand track (see Fig. 1) may also be used for loading mine-run by closing the doors with which the screen is equipped.

The coal passing through the bar screen (less than  $3\frac{1}{2}$  in.) is fed by gravity to two Traylor vibrating screens. These are in tandem, the first producing screenings under  $\frac{3}{4}$  in. These screenings are loaded through an inclosed chute on the right-hand track. (The tracks from right to left are ordinarily designated as slack, nut and egg-and-lump tracks.) The coal over  $\frac{3}{4}$  in. passes to the second Traylor screen. This screen produces a nut coal between  $\frac{3}{4}$  and 3 in. in size, which goes over a loading boom to the cars on the middle track. All coal over 3 in. passes from this screen to a conveyor and is carried to the picking conveyor mentioned above.

**I**F IT is not desired to size and load the coal from the first Traylor screen, the second may be blanked by a sheet-iron plate and the coal conveyed to the picking conveyor for cleaning. It is then loaded, with that

Fig. 1—Elevation of Tippie and Conveyor

Loading booms and picking tables have since been put in on the middle and left-hand tracks. Fairmont car retarders also have been placed in service.





from the bar screens, as  $\frac{3}{4}$ -in. lump free from slack and dust.

Power to operate the conveyor, reciprocating feeder, picking table and other machinery is supplied by a 25-hp. motor placed at the upper end of the conveyor. This motor operates on 440 volts from a 3-phase 60-cycle supply. It is belted to a large pulley which is connected through reduction

gears to the upper end of the conveyor roll drive. The power for the entire plant is then supplied by this motor, which is controlled by a single push button located on the picking-table floor of the tippie.

The Traylor screens, which are 42 x 70 in. in size, are operated by

$\frac{1}{2}$ -hp. motor-generator sets which obtain their current from the same source as the large motor. These are controlled by a snap switch. A rheostat control enables the operator to adjust the magnitude (amplitude) of the vibratory motion to suit the character of the coal, whether wet or dry. A double-pole single-throw switch is placed in the screen circuit, allowing No. 2 screen to be cut out if desired while No. 1 remains in operation.

One hundred and twenty-five tons per hour is the rated capacity of the plant. This tippie construction is of timber and corrugated sheet iron. Steel work was thought not to be necessary because of freedom from vibration due to lack of reciprocating mechanism. The cost of the plant was about \$20 per ton of daily capacity.

The plant was designed and built by the Stephens-Adamson Co., which also furnished the conveying equipment. The daily production of the mine is about 800 tons. Commenting on the operation of the tippie, W. W. Hawkins, president of the company, said: "The vibrator screens are doing wonderful work, taking care of the worst wet coal produced and removing all the slack."

## Trend Is to Use Time-Limit Control for A.C. Hoists

IN A discussion of electrical control equipments for mine hoists, L. C. Hardesty, industrial control department, General Electric Co., refers to a 700-hp. slope hoist with liquid rheostat installed in 1912, saying: "At that time the liquid rheostat was popular, especially for slope hoist work, but in recent years the magnetic type with grid resistor has been the preference of operators, because it requires less attention."

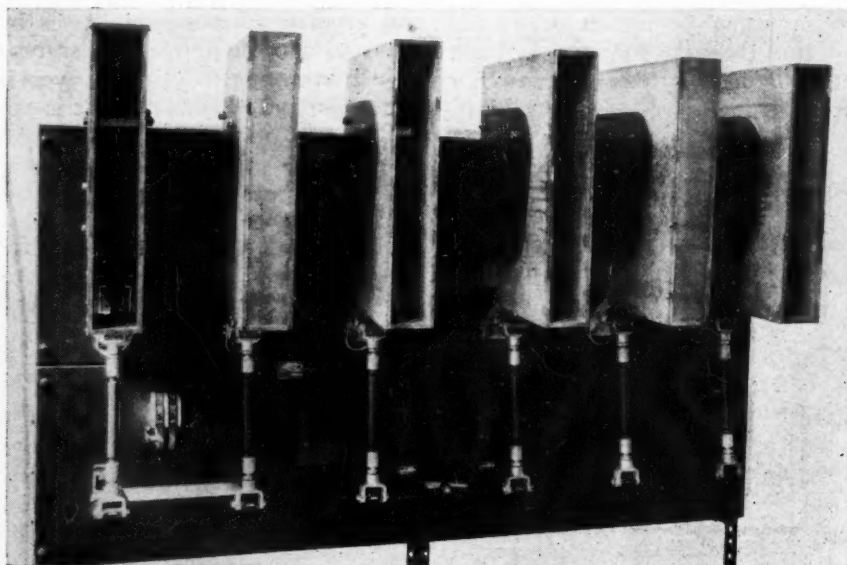
For many years in the past the steam engine was almost universally used for operating mine hoists. With the development of electric motor and control equipment, however, the application of these devices to mine hoists, though slow at first, has been steadily increasing. General appreciation of the tremendous advantage of electric drive together with the extension of central station power service in fact has brought about nearly complete domination of electric power in this field. The benefits of increased economy, simplicity, reliability, flexibility and safety with electric drive

are now so well recognized that consideration of other forms of energy is now rare.

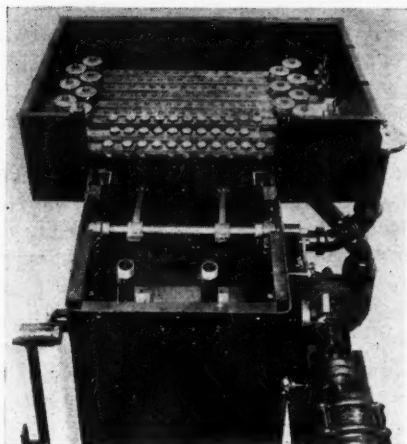
Speaking of primary contactors for use up to 3,300 volts and referring

500-Ampere Contactors for 3,300 Volts

to the photograph, he goes on to say: "These contactors are triple-pole, double-throw for reversing three-phase motors, and are provided with both electrical and mechanical interlocks and also potential interlocking, which prevents one contactor from closing until rupture of the arcs on the other contactor is complete. This type of contactor has successfully overcome the difficulties experienced with the unsatisfactory and danger-







*Looking in the Top of a Liquid Rheostat*

ous oil-immersed type for hoist service, and is now used on several hundred installations in capacities up to and including 2,200 hp., both in America and abroad."

" . . . Adequate creepage distances are provided and the arc chutes open alternately at the front and top to afford long flash-over paths."

Secondary control panels are next discussed. "A total of eight points usually is recommended for equipments exceeding 100-hp. capacity, but for shaft hoists seven points often are used. The first three points provide for low-speed operation.

"Although the great majority of hoist-control equipments operate with current-limit accelerating relays, the application of time interlocks, recently perfected, is becoming more and more frequent. A panel with contactors assembled with pendulum type time interlocks is shown in an accompanying photograph. Each contactor closes as the time interlock, actuated by the contactor immediately preceding it, closes the coil-energizing circuit. The interlocks are adjusted for such time intervals as will limit the current peaks to approximately uniform values. With definite time interlocks the wiring is simplified, the current transformers for operating the current-limit relays are dispensed with, and fewer interlocks are required."

The design of resistors should provide "sufficient resistance to limit the motor torque on the first controller point to one-third the full-load torque, and the first three steps afford slow-speed operation at light loads, the remaining points being purely accelerating steps.

"While for the great majority of cases, because of lower maintenance, grid resistors and contactors are used, liquid rheostats occasionally are employed for motors of compara-

tively large capacity and in particular instances where a strong preference exists for a rheostat providing the continuous gradations of resistance afforded by the liquid type. General Electric liquid rheostats have been supplied for motors up to 1,800-hp. capacity, but in general are not used for motors smaller than 500 hp.

"In order to operate successfully in this class of service the liquid rheostat must provide the following characteristics: (1) High resistance in circuit at start, (2) low resistance when in full speed position; (3) permit plugging motor without flashing between phases; (4) provide adequate dissipating capacity."

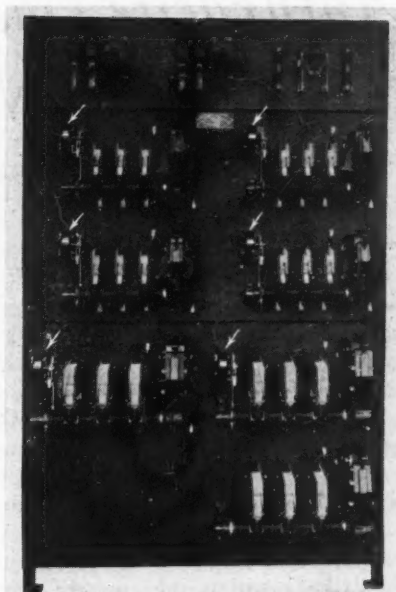
After describing the General Electric liquid rheostats, which contain two sections of electrodes, one of high resistance and the other of low resistance, Mr. Hardesty concludes by saying: "The resistance ratio of

## How Much Inert Dust-Is Needed?

During the past fifteen years the U. S. Bureau of Mines, Washington, D. C., at its experimental mine near Pittsburgh, Pa., has tested mine-sized dust prepared from coal taken from 29 different mines in different parts of the country. These range in composition from the anthracites of eastern Pennsylvania to the high volatile coals of Utah and Wyoming.

The quantity of incombustible material required in a mixture to prevent propagation of an explosion under the standard propagation test conditions was determined for each coal. It was found that 20 per cent was sufficient for a coal whose ratio of volatile to total combustible was 0.15, but the quantity increased rapidly with increasing ratio and 61 per cent was required with coals whose ratio was 0.23. There was then no further increase until ratio 0.40 was passed; that is a coal having a ratio of 0.40 required 61 per cent incombustible in the mixture the same as a coal of ratio 0.23. Beyond ratio 0.40 there was a slow increase and 70 per cent incombustible was required for coals whose ratio was 0.50.

It is felt that these limits are known with sufficient accuracy to justify applying them to any coal not tested in the experimental mine. Composition is one of six factors which influence the explosibility of coal dust and a paper summarizing the present knowledge of all six is in preparation by the Bureau.



*Arrows Point to Pendulum Interlocks*

these rheostats is approximately 100 to 1; that is, if the electrolyte is of such density as to give a motor slip of, say, 3 per cent at full load and when in full speed position, the resistance at start will be sufficient to limit the motor torque at standstill to one-third, full-load torque."

## Keeping Coal Benches Separate Puts Plant on Full Time

*(Continued from page 544)*

One company tried to leave it in the mine, but was prohibited from doing so by the State Department of Mines. By a device that locks the horns of the crossover dump over which the best coal is discharged the cars containing bug dust and bottom coal can be passed over the crossover dump to another dumping point just beyond. The bug dust is discharged at the same point as the bottom coal, which is mined solely in the main entries, where it is lifted merely to provide the necessary height. Some of the bug dust is used at the mine in the power plant for firing two 150-hp. boilers.

The coal from the seam above the undercut contains about 24 per cent of volatile matter and from 69 to 70 per cent of fixed carbon, the thermal value on combustion being 14,455 B.t.u. and the fusion temperature of the ash about 2,635 deg. F. As the roof is good the clean coal is not rendered dirty by the falling of material from the roof. Permissible powder is used and all shots are fired by electric detonators and batteries.

# *Anthracite Operators Realize Necessity for New Sales Program*

*By Sydney A. Hale*

*Managing Editor, Coal Age*

**A**NTHRACITE production during the first 34 weeks of the current calendar year was nearly 12,000,000 net tons behind the output for the corresponding period in 1924 and approximately 5,455,000 net tons less than the cumulative total for the corresponding period last year. These figures are a striking commentary both on the failure of the hard-coal industry to recover its pre-strike position and on the fact that the total output for 1928 promises to fall below that of 1927—a year which brought no great joy to the mining interests of northeastern Pennsylvania.

Further illumination on what has been happening to the hard-coal trade is furnished by a recent survey made by the Anthracite Co-operative Congress—the organization which flowered so dramatically at the famous Mt. Carmel powwow of last November. In a summary of replies received from retail coal merchants in nearly 200 communities in the anthracite-consuming belt over 85 per cent reported that the sale of hard coal was not making headway because of the competition of other fuels. Sixty-six out of 74 communities in the New England states intimated that the demand for anthracite was on the downgrade. Pennsylvania, New York and New Jersey had the same story to tell although here and there a community registered an increase. Chicago reported a slight gain and credited the increase to the sales efforts of the anthracite producing interests<sup>1</sup>.

**H**OW the anthracite producers as a group have been fighting to regain lost markets and to check further inroads of competitive fuels was detailed in the preceding issue<sup>2</sup>. Under the leadership of the Anthracite Operators' Conference an effort has been made to establish a degree of uniformity in sizing and in standards of preparation which would meet the valid objections of consumers and retail distributors to the product too often shipped in the heyday of war and post-war demand.

While testimony as to the efficacy of these efforts to improve the quality of the product are mixed the preponderance of evidence seems to favor the verdict that the improvement has been substantial and there are distributors and consumers who are frankly enthusiastic over the quality of coal shipped in recent months. Unfortunately for the industry, however, the memory of past shipments which did not conform to acceptable standards still lingers and this has been an important factor in preventing the recovery of some tonnage which went to competitive fuels in 1925-26. Complaint is still heard of the undersize in chestnut and pea. The claims that the new standard chestnut is a more efficient fuel have not been accepted at their face value by many consumers—possibly because the supporting data were never really sold to the ultimate buyer.

**C**OMBUSTION engineering service as a merchandising agency has been built up through the Anthracite Coal Service and the scope of activities widened to include the training of retail distributors in the fundamentals of combustion. The idea that anthracite must be a serviced fuel and that those who sell it should be real "trouble shooters" when the household consumer complains are becoming part of the creed of the new merchandising program. With the co-operation of all but two of the major producing interests a general advertising campaign featuring the product as "Cert-I-Fide" coal has been launched. This campaign embraces both newspaper and billboard publicity. In the opinion of many factors in the industry, however, the newspaper part of the campaign has not registered in the way its sponsors had hoped. The Anthracite Bureau of Information also is contributing its aid to the merchandising movement.

Yet, great as has been the progress made when compared with the dead

level of complacent self-sufficiency all too common in the early post-war years, the development of an adequate merchandising program is still in its infancy. The biggest achievement so far has been one of psychology. Beyond what already has been done in a concrete way lie problems of preparation, distribution and servicing which must be solved if the industry is to make certain its future prosperity. Have we had the last word on sizing? Are there possibilities of identification of the product through packaging? How will the credit situation be met? Who is to carry the load of summer buying? Must not the hook-up between the producer, the retailer and the manufacturer of heating equipment be much closer than it is today? Would it be wise for the anthracite industry to develop and directly finance the sale of a more automatic type of heating equipment for the household?

That these are not fanciful questions is plain from the most superficial survey of the competitive situation. Hand-to-mouth buying and installment selling have cut through the pre-war fabric of distribution and forced general industry to reweave its merchandising patterns. "A dollar down and a dollar a week" may grieve the provident and furnish quips for the jokesmith but the appeal of this selling is potent in drawing out the consumer's dollars—and industry at large is fighting for a share of those dollars.

**S**OME of the keenest merchandising brains in the country are engaged in a sharp contest to devise ways of making it easy for the consumer to buy. Oil-burner manufacturers, for example, are featuring the modest down payment and the long-time monthly arrangements for liquidating the balance of the bill open to the consumer who will divert part of his dollars their way. In fact, so much emphasis has been placed upon this feature of buying an oil burner that many householders who do not take the trouble to dig into the subject—and what incentive is there for such digging?—believe this selling arrangement peculiar to that type of heating plant. Why should the coal industry and its allies be silent or speak only in faint whispers when competitors are shouting for the attention of the consumer?

Many of the individual producers are now capitalizing on the work being done by the operators as a

<sup>1</sup>*Savard's Journal*, June 30, 1928, p. 207.  
<sup>2</sup>*Coal Age*, Vol. 33, p. 467.



group and, as in the case just cited, some individual activities in merchandising promotion are ahead of the group activity. This is in itself no reflection upon group effort. In the very nature of group work it is inevitable that progress will be slower than in individual activity since it is easier to sell an idea to one organization than to win agreement from a group representing scores of producers each with his pet scheme for merchandising salvation and strongly entrenched opposition to suggestions which run counter to that plan or which give it a subordinate place. Human nature is cast in the same molds in the anthracite region as in other parts of the country: delay is part of the price of co-operation.

**T**HE question of group advertising has been under active discussion among anthracite operators for several years. But it remained for an individual organization, one of the two major interests not a party to the group campaign, to first translate discussion into action. This particular organization has been a consistent and an effective user of daily newspaper space with copy carrying a personal touch by running over the signature of the president of the company. Another important old-line company, a participant in the group advertising, now has an individual newspaper advertising campaign under way. This campaign will be tied in closely with the work of its retail distributors. Salesmen will be armed with dealer helps, "mats" will be furnished local distributors and retailers will be inducted into the mysteries of local coverage and how they can cash in upon the advertising appropriation of the selling company.

**T**HIS same organization also will use the radio as part of its merchandising plan. It has engaged a well-known American singer as its feature artist to popularize this form of advertising with the listeners-in. Another company which used the radio last year will again be on the air. Billboard advertising also will be employed by some of the selling agencies. In general dealer helps will be used by more companies. These helps will range from elaborate and complete selling plans with letters, mailing cards and suggested local newspaper copy to the more conventional folders and envelop stuffers.

Several methods to identify the product from the shipper to the ultimate consumer are in use at the

present time. In the case of coal sold under the general trade name of "Cert-I-Fide" metal signs are furnished to retail merchants distributing this coal and stickers carrying the trademark are supplied for attaching to the delivery tickets when coal is sold to the householder. One selling agency sends a postcard shipping notice to the retailer giving car numbers and initials, weights and the name of the inspector who passed the coal as being up to the standards for "clean and merchantable" fuel.

**A**NOTHER company reports considerable success with the use of cardboard disks scattered through the coal. In the case of this company an effort is being made to build up a line of exclusive retail distributors in anthracite-consuming communities and various forms of advertising are employed to popularize the coal and the trademark with the consumer. Reports from both retail distributors and from consumers who have been sold on this plan have been very favorable and the demand for coal so identified appears to be increasing. The continued success of the scheme, of course, will depend upon the degree with which rigid standards of inspection are enforced.

The most picturesque method of identification yet adopted has been that of dyeing the coal. One company, which experimented with this method for three years, is now offering part of its product to the public in the form of coal partially colored a peacock blue. In the early stages of the development trial shipments of large coal were made to selected communities. At the present time, however, it is understood that the dyeing is being confined to shipments of a specially prepared buckwheat coal for domestic use. Another company has started experiments with red and purple dyes.

Engineering service looms large in the program of several companies. Many of these, without criticizing or belittling the work done by the staff of the Anthracite Coal Service, have felt that this work as a merchandising agency is so important that they wanted to have their own corps of engineers. One company, for example, makes a point of persuading retailers to allow it to put a service engineer at the distributor's disposal for a period of two weeks. During that time the engineer is to all intents and purposes an employee of the retailer although he is paid by the producer. In that period the engi-

neer endeavors to train the retailer in combustion principles and furnace inspection. He begins his work by an inspection of the heating equipment in the retailer's office and his second inspection is in the retailer's own home.

Furnace cards, 14 x 22 in., imprinted with the retailer's name are furnished for distribution to the customers of the dealer. These cards, punched for hanging alongside the heating plant, show a typical installation, how dampers should be regulated, how fire should be controlled, flues to be cleaned out and the common causes of heat losses and wastes such as air leaks, burned or broken grates, ash accumulation, improper installation of smoke pipe and loosely fitted clean-out doors. Separate cards are furnished for hot air, hot water and steam plants.

**M**UCH of the merchandising promotional work, of course, still depends upon contact between the representatives of the producing interests and the retail distributors. Those producing interests that are thoroughly awake to the situation and to the inroads which competitive fuels have made upon their territory are constantly striving to point the work of the printed word and the specialized service of the combustion engineer with preachment and precept which help the retailer to make the most effective use of the merchandising aids which the selling agency has to offer. If the suggested local advertising copy prepared for dealer use does not seem to cover the particular local situation with which an individual dealer is struggling, there are companies which stand ready to co-operate with him in the preparation of copy which will be wholly individual in tone and appeal and at least one company conducts all its promotional advertising copy work for the dealer on the basis of individualized appeal.

In the measure that these sales representatives of producing companies are conscious of the new era in anthracite merchandising they are heartening the retail coal merchant who has been fighting the losses growing out of competition, consumer indifference to summer storage and depressing credit conditions. And it is significant of the new spirit that a canvass of anthracite sales agencies reveals the greatest enthusiasm for the future in those offices where the greatest efforts are being put forth to service and merchandise the product.

# Approved List of PERMISSIBLE EQUIPMENT

Issued by Bureau of Mines

**T**HE following list of permissible mining equipment, rescue apparatus and gas masks includes all equipment tested and approved by the U. S. Bureau of Mines to July 1, 1928. The system under which these devices were tested permits the manufacturer after his equipment has passed certain tests prescribed by the Bureau, to mark his equipment with a seal showing that it has been "approved" by the Bureau. These tests are designed to insure that the equipment has the minimum requirements for safety in use.

In the list following, published by permission of the Bureau, the equipment is classified by general types. Under each general classification is shown the type of individual equipment approved, the approval number of the Bureau, the manufacturer to whom the approval number or numbers were issued and the date or dates of such approval.

This list is revised semi-annually. It is planned to make the publication of the changes in and additions to the list a regular feature of *Coal Age*, but subsequent publications in these columns will cover only the changes and not the complete list of permissible equipment.

## PERMISSIBLE MINING MACHINES, COAL DRILLS, ETC.

### Approved Under Schedules 2, 2A and 2B Air Compressors

- (1) Type WK-26 compressor; 30-hp. motor, 250-500 volts, d.c.; approvals 117 and 117A; Sullivan Machinery Co., March 12, 1925.
- (2) Type WK-39 self-propelled compressor; 30-hp. motor, 250-500 volts, d.c.; approvals 120 and 120A; Sullivan Machinery Co., July 28, 1925.
- (3) Types CP-26G, CP-26D and CP-26H compressors; 25-hp. motor, 250-500 volts, d.c.; approvals 128 and 128A; General Electric Co., March 21, 1927, and July 16, 1926.

### Loading Machines and Conveyors

- (1) Type 43-A Shortwaloader; Jeffrey 50-hp. motor, 250-500 volts, d.c.; approvals 122 and 122A; Jeffrey Mfg. Co., Jan. 8, 1926.
- (2) Type 44-B conveyor-loader; Jeffrey 50-hp. motor, 250-500 volts, d.c.; approvals 123 and 123A; Jeffrey Mfg. Co., Jan. 15, 1926.
- (3) Belt-type conveyor; South Fork Foundry & Machine Co. 5-hp. motor, 250 volts, d.c.; approval 126; Bird Coal Co., June 25, 1926.
- (4) Shovel-type loading machine; General Electric motor, 30-hp., 250-500 volts, d.c.; approvals 127 and 127A; Myers-Whaley Co., July 16, 1926, and Sept. 23, 1927.

- (5) Chain-type conveyor; South Fork Foundry & Machine Co. 5-hp. motor, 250 volts, d.c.; approval 129; Bird Coal Co., July 21, 1926.

- (6) Type 5-BU loading machine; Crocker Wheeler 25-hp. motor, Ward Leonard controller, 230-500 volts, d.c.; approvals 132 and 132A; Joy Mfg. Co., Dec. 29, 1926, and March 22, 1927.

- (7) Type 49-A chain-type conveyor; Jeffrey 3-hp. motor, 250-500 volts, d.c.; approvals 133 and 133A; Jeffrey Mfg. Co., Feb. 10, 1927.

- (8) Conveyor-type loader; General Electric 30-hp. motor, 250-500 volts, d.c.; approvals 135 and 135A; Sullivan Machinery Co., May 11, 1927.

- (9) Type 136-EC Entryloader; Goodman 35-hp. motor, 210-500 volts, d.c.; approvals 138 and 138A; Goodman Mfg. Co., Aug. 5, 1927.

- (10) Belt-type conveyor; South Fork Foundry & Machine Co. 1-hp. motor, 220 volts, d.c.; approval 139; Lorain Steel Co., Aug. 19, 1927.

- (11) Type A.F.-10x8 shaker conveyor; Mavor & Coulson, Ltd. 15-hp. motor, 250-500 volts, d.c.; approvals 149 and 149A; C. H. McCullough Engineering Co., March 29, 1928.

- (12) Type 48-E power shovel; Goodman 15-hp. motor, 210-500 volts, d.c.; approvals 150 and 150A; Goodman Mfg. Co., May 11, 1928.

- (13) Chain-type conveyor; South Fork Foundry & Machine Co. 5-hp. motor, 250 volts, d.c.; approval 151; South Fork Foundry & Machine Co., May 19, 1928.

### Coal Drills

- (1) Type 2-BF drill; 1-hp. motor, 80-110-250 volts, d.c.; approvals 109 and 109A; Chicago Pneumatic Tool Co., Sept. 19, 1922.

- (2) Type CD drill; 3-hp. motor, 110-230 volts, d.c.; approvals 110 and 110A; Martin-Hardsocg Co., Sept. 16, 1922.

- (3) Type A-5 drill; 3-hp. motor, 110-250 volts, d.c.; approvals 119 and 119A; Jeffrey Mfg. Co., April 15, 1925.

- (4) Type 56-A drilling machine; two type A-5 Jeffrey drills on truck propelled by Jeffrey 13-hp. motor, 250-500 volts, d.c.; approvals 147 and 147A; Jeffrey Mfg. Co., Feb. 8, 1928.

### Mining Machines

- (1) Type CE-7 Ironclad shortwall mining machine; 30-hp. motor, 250-500 volts, d.c.; approvals 100 and 100A; Sullivan Machinery Co., Sept. 30 and Oct. 20, 1914.

- (2) Types 12-CC and 12-EC shortwall mining machines; 35-hp. motor, 210-500 volts, d.c.; approvals 101 and 101A; Goodman Mfg. Co., May 20, 1916.

- (3) Type 35-B shortwall mining machine; 35-hp. motor, 250-500 volts d.c.; approvals 103 and 103A; Jeffrey Mfg. Co., Nov. 2, 1917.

- (4) Type CE-7 Ironclad shortwall mining machine; 30-hp. motor, 220-440 volts, a.c.; approvals 104 and 104A; Sullivan Machinery Co., Jan. 16, 1919.

- (5) Types 12-CJ and 12-EJ shortwall mining machines; 50-hp. motor, 210-500 volts, d.c.; approvals 105 and 105A; Goodman Mfg. Co., June 21, 1920.

- (6) Types 112-CC and 112-EC shortwall mining machines; 50-hp. motor, 210-500 volts, d.c.; approvals 106 and 106A; Goodman Mfg. Co., Feb. 9, 1922.

- (7) Types 12-CC and 12-EC shortwall mining machines; 35-hp. motor, 210-500 volts, d.c.; approvals 107 and 107A; Goodman Mfg. Co., Feb. 9, 1922.

- (8) Types 112-CJ and 112-EJ shortwall mining machines; 35-hp. motor, 210-500 volts, d.c.; approvals 108 and 108A; Goodman Mfg. Co., Feb. 9, 1922.

- (9) Type 35-BB shortwall mining machine; 50-hp. motor, 250-500 volts, d.c.; approvals 111 and 111A; Jeffrey Mfg. Co., Oct. 16, 1922.

- (10) Type 29-C arcwall mining machine; 50-hp. motor, 250-500 volts, d.c.; approvals 112 and 112A; Jeffrey Mfg. Co., March 13, 1924.

- (11) Types 212-EJ and 212-CJ shortwall mining machines; 50-hp. motor, 210-500 volts, d.c.; approvals 113 and 113A; Goodman Mfg. Co., Nov. 4, 1924.

- (12) Types 112-CK3 and 112-EK3 mining machines; 35-hp. motor, 220-440 volts, a.c.; approvals 114 and 114A; Goodman Mfg. Co., Feb. 7, 1925.

- (13) Types 112-CL3 and 112-EL3 shortwall mining machines; 50-hp. motor, 220-440 volts, a.c.; approvals 115 and 115A; Goodman Mfg. Co., Feb. 7, 1925.

- (14) Type 124-EJ slabbing machine; 50-hp. motor, 210-500 volts, d.c.; approvals 118 and 118A; Goodman Mfg. Co., March 12, 1925.

- (15) Type 30-A shearing-drilling machine; 50-hp. motor, 250-500 volts, d.c.; approvals 125 and 125A; Jeffrey Mfg. Co., April 26, 1926.

- (16) Type CLU cutting-shearing machine; 30-hp. motor, 250-500 volts, d.c.; approvals 134 and 134A; Sullivan Machinery Co., March 18, 1927.

- (17) Type CLE longwall mining machine; 30-hp. motor, 250-500 volts, d.c.; approvals 136 and 136A; Sullivan Machinery Co., May 28, 1927.

- (18) Type S-3 shearing machine; Crocker-Wheeler 25-hp. motor, 250 volts, d.c.; approval 148A; Joy Mfg. Co., Feb. 8, 1928.

- (19) Type B-2 mining machine; Goodman 50-hp. motor, 250-500 volts, d.c.; approvals 152 and 152A; Oldroyd Machine Co., June 15, 1928.

### Room Hoists

- (1) Oaks safety room hoist; 5-hp. motor, 250-500 volts, d.c.; approvals 116 and 116A; South Fork Foundry & Machine Co., Feb. 13, 1925.

### Mine Pumps

- (1) Dravo-Doyle mine pump; type Austin 5x6; 5-hp. General Electric motor and control, 500 volts, d.c.; approval 121A; Dravo-Doyle Co., Oct. 1, 1925.

- (2) Dravo-Doyle mine pump; type Austin 5x6; 5-hp. Westinghouse motor and control, 250-500 volts, d.c.; approvals 124 and 124A; Dravo-Doyle Co., April 14, 1926.

- (3) Fairmont No. 1 mine pump; Westinghouse 5-hp. motor and control; 115, 230 and 500 volts, d.c.; approvals 140 and 140A; Westinghouse Electric & Mfg. Co., Nov. 1, 1927.

- (4) Deming "Oil Rite" mine pump; Westinghouse 5-hp. motor and control; 115, 230 and 500 volts, d.c.; approvals 141 and 141A; Westinghouse Electric & Mfg. Co., Nov. 1, 1927.

- (5) Scranton 5x6 mine pump; Westinghouse 5-hp. motor and control; 115, 230 and 500 volts, d.c.; approvals 143 and 143A; Westinghouse Electric & Mfg. Co., Nov. 1, 1927.

- (6) Weinman "Self-Oiler" mine pump; Westinghouse 5-hp. motor and control; 115, 230 and 500 volts, d.c.; approvals 144 and 144A; Westinghouse Electric & Mfg. Co., Nov. 1, 1927.

- (7) Dravo-Doyle mine pump; type Austin 5x6; Westinghouse 5-hp. motor and control; 115, 230 and 500 volts, d.c.; approvals 145 and 145A; Westinghouse Electric & Mfg. Co., Nov. 18, 1927.

### Concrete Mixers

- (1) Consolidation Coal Co. Austin type concrete mixer; Westinghouse 5-hp. motor and control; 115, 230 and 500 volts, d.c.; approvals 142 and 142A; Westinghouse Electric & Mfg. Co., Nov. 1, 1927.

### Rock-Dusting Machine

- (1) Mine Safety Appliances Co. rock-dusting machine; Westinghouse 5-hp. 230-volt motor and control, Mancha headlight; approval 130; Mine Safety Appliances Co., Nov. 5, 1926.

- (2) Diamond Machine Co. rock-dusting machine; Jeffrey 15-hp. 230-volt motor and control; approval 131; Diamond Machine Co., Dec. 28, 1926.

- (3) Mine Safety Appliances Co. rock-dusting machine; Jeffrey 15-hp. 230-volt motor and control, Mancha headlight; approval 137; Mine Safety Appliances Co., July 2, 1927.

- (4) Type 125 rock-dusting machine; Westinghouse 12-hp. motor and control; approvals 146 and 146A; Mine Safety Appliances Co., Jan. 20, 1928, and April 3, 1928.

## PERMISSIBLE ELECTRIC SWITCHES AND JUNCTION BOXES

### Approved Under Schedule 4A

- (1) Inclosed two-pole fused switch—200 amp., 250 volts; 100 amp., 500 volts; d.c.; approvals 400 and 400A; Ohio Brass Co., June 16, 1928, and Aug. 5, 1925.

- (2) Inclosed two-pole fused switch—250 amp., 250 volts; 150 amp., 500 volts; d.c.;



approvals 401 and 401A; Sullivan Machinery Co., May 11, 1927.  
(3) Inclosed 3-pole fused switch—250 amp., 220 volts; 150 amp., 440 volts; a.c.; approvals 402 and 402A; Sullivan Machinery Co., May 11, 1927.

#### PERMISSIBLE ELECTRIC CAP LAMPS FOR MINERS

##### *Approved Under Schedules 6A and 6B*

- (1) Edison Model "C" lamp; approval 10; Edison Storage Battery Co., Feb. 24, 1915.
- (2) Wico lamp; approval 14; Witherbee Igniter Co., June 10, 1916.
- (3) Wheat lamp; approval 17; Koehler Mfg. Co., Sept. 23, 1919.
- (4) Edison Model "E" lamp; approval 18; Edison Storage Battery Co., March 28, 1923.
- (5) RM-6 f. d. Ceag lamp; approval 19; Concordia Electric Co., Aug. 2, 1923.
- (6) Super-Wheat lamp; approval 20; Koehler Mfg. Co., April 27, 1926.
- (7) RM-7 Ceag lamp; approval 21; Concordia Electric Co., June 18, 1926.
- (8) Edison Model G lamp; approval 22; Edison Storage Battery Co., Nov. 16, 1927.
- (9) RM-8 Ceag lamp; approval 23; Concordia Electric Co., April 3, 1928.

#### PERMISSIBLE FLAME SAFETY LAMPS

##### *Approved Under Schedule 7, 7A and 7B*

- (1) Koehler steel frame lamp, flat wick; approval 201; Koehler Mfg. Co., Aug. 21, 1915.
- (2) Koehler steel frame lamp, round wick; approval 201A; Koehler Mfg. Co., July 29, 1918.
- (3) Koehler aluminum frame lamp, flat wick; approval 203; Koehler Mfg. Co., Feb. 7, 1919.
- (4) Koehler aluminum frame lamp, round wick; approval 203A; Koehler Mfg. Co., Feb. 7, 1919.
- (5) Wolf brass frame lamp, round wick; approval 204; Wolf Safety Lamp Co., July 18, 1921.
- (6) Wolf aluminum frame lamp, round wick; approval 205; Wolf Safety Lamp Co., April 24, 1924.
- (7) Wolf aluminum frame lamp, flat wick; approval 206; Wolf Safety Lamp Co., April 24, 1924.
- (8) Wolf brass frame lamp, flat wick; approval 208; Wolf Safety Lamp Co., March 14, 1927.

#### PERMISSIBLE ELECTRIC HAND AND TRIP LAMPS

##### *Approved Under Schedule 10A*

- (1) Type RMC-RMCT Ceag hand and trip lamp; approval 1000; Concordia Electric Co., May 25, 1922.
- (2) Model "E" inspection lamp; approval 1001; Mine Safety Appliances Co., July 28, 1925.
- (3) Model "E" signal lamp; approval 1002; Mine Safety Appliances Co., Dec. 8, 1927.
- (4) Model "E" hand lamp; approval 1003; Mine Safety Appliances Co., Jan. 12, 1928.

#### PERMISSIBLE ELECTRIC FLASH LAMPS

##### *Approved Under Schedule 11*

- (1) Eveready safety type flash lamp; approval 601; National Carbon Co., Oct. 22, 1924.

#### PERMISSIBLE METHANE INDICATORS AND DETECTORS

##### *Approval Under Schedules 7B and 8A*

##### *Methane Indicating Detectors*

- (1) Burrell indicator; approval 800; Mine Safety Appliances Co., March 10, 1922.

##### *Methane Detectors*

- (1) Wolf flame-type detector; approval 207; Wolf Safety Lamp, Nov. 21, 1924.
- (2) Martienssen electric-type detector; approval 801; Gessellschaft für nautische Instrumente, Kiel, Germany; U. S. representative, F. O. Willhofft, New York, Jan. 9, 1928.

#### PERMISSIBLE SINGLE-SHOT BLAST- ING UNITS

##### *Approved Under Schedule 12*

- (1) Attachment for Edison M-8 mine lamp battery; approval 1200; Mine Safety Appliances Co., May 24, 1920.
- (2) Davis No. O magneto-type blaster; approval 1201; Davis Instrument Mfg. Co., March 15, 1921.

- (3) Du Pont pocket magneto type blaster; approval 1202; E. I. Du Pont de Nemours & Co., Aug. 15, 1924.

- (4) Davis No. 00 magneto-type blaster; approval 1203; Davis Instrument Mfg. Co., Oct. 17, 1924.

- (5) Attachment for Concordia Type RM-6 f. d. mine lamp battery; approval 1204; Concordia Electric Co., March 2, 1925.

- (6) Attachment for Edison Model "E" lamp battery; approval 1205; Mine Safety Appliances Co., April 28, 1925.
- (7) Eveready dry cell blaster; approval 1206; National Carbon Co., Aug. 20, 1925.

- (8) Davis No. 000 magneto-type blaster; approval 1207; Davis Instrument Mfg. Co., Nov. 18, 1926.

#### PERMISSIBLE MINE TELEPHONES

##### *Approved Under Schedule 9A*

- (1) Redesigned Type No. 1336 mine telephone; approval 901; Western Electric Co., July 16, 1927.

#### PERMISSIBLE STORAGE BATTERY LOCOMOTIVES AND POWER TRUCKS

##### *Approved Under Schedule 15*

##### *Gathering Locomotives*

- (1) Whitcomb E.S.B. flame-proof locomotive; approval 1500; Geo. D. Whitcomb Co., May 14, 1921. The following batteries are optional: 80 cells, Edison G-14; 96 cells, Edison A-10; 48 cells, Gould, 29 plate.

- (2) Jeffrey type B.D.M. class 40 locomotive; approval 1501; Jeffrey Mfg. Co., Oct. 11, 1921. The following batteries are optional: 80 cells Edison A-12; 88 cells Edison A-12; 104 cells Edison A-12; 49 cells Phila. 33 plate; 48 cells Exide 21 plate; 80 cells Edison A-8.

- (3) Mancha flame-proof "Hercules" locomotive; approval 1502; Mancha Storage Battery Locomotive Co., Nov. 13, 1922. The following batteries are optional: 48 cells Phila. 33 plate; 48 cells Exide 27 plate; 48 cells Gould 33 plate; 48 cells Exide 27 plate.

- (4) Ironton type W.O.G. locomotive; approval 1503; Ironton Engine Co., March 24, 1923. The following batteries are optional: 88 cells Edison A-10; 49 cells Phila. 33 plate; 48 cells Phila. 33 plate.

- (5) Goodman articulated type locomotive; approval 1504; Goodman Mfg. Co., July 10, 1923. Battery, 134 cells Edison A-8.

- (6) Mancha Hercules A and AX locomotives; approval 1505; Mancha Storage Battery Locomotive Co., April 5, 1924. The following batteries are optional: 54 cells 33 plate Exide; 54 cells Phila. 39 plate; 90 cells Edison A-12; 92 cells Edison A-10.

- (7) Jeffrey type B.D.M. Class 25 locomotive; approval 1507, reissued to Jeffrey Mfg. Co., Aug. 20, 1925. The following batteries are optional: 54 cells Exide 33 plate; 54 cells Phila. 39 plate; 54 cells Phila. 33 plate; 48 cells K.W. 37 plate; 49 cells Exide 27 plate; 88 cells Edison A-12.

- (8) Goodman Type 10-30 locomotive; approval 1508; Goodman Mfg. Co., March 21, 1925. The following batteries are optional: 48 cells Exide 33 plate; 48 cells Phila. 39 plate.

- (9) Goodman Type 8-30 locomotive; approval 1509; Goodman Mfg. Co., Sept. 25, 1925. Battery, 48 cells Exide 23 plate.

- (10) Mancha Standard A, AN and AX locomotives; approval 1511; Mancha Storage Battery Locomotive Co., Nov. 10, 1925. The following batteries are optional: 48 cells Phila. 23 plate; 48 cells Phila. 29 plate; 49 cells Phila. 29 plate; 48 cells Exide 19 plate; 48 cells Exide 23 plate; 56 cells Phila. 15 plate; 80 cells Edison A-8.

- (11) Westinghouse-Baldwin locomotive; approval 1512; Westinghouse Electric & Mfg. Co., Nov. 11, 1925. The following batteries are optional: 80 cells Edison A-8; 48 cells Exide 19 plate; 48 cells Exide 27 plate; 80 cells Edison A-10.

- (12) General Electric type LSBE-2C6-C9 locomotive; approval 1513; General Electric Co., Feb. 25, 1926. The following batteries are optional: 48 cells Exide 27 plate; 80 cells Edison A-12; 48 cells Exide 33 plate.

- (13) Jeffrey Type B.D.M. 25 Form H locomotive; approval 1516; Jeffrey Mfg. Co., Dec. 28, 1926. Battery, 48 cells Exide 33 plate; 54 cells Phila. 39 plate; 54 cells Exide 33 plate.

- (14) Atlas Type B locomotive; approval 1517; Atlas Car & Mfg. Co., Feb. 10, 1927. Battery, 48 cells Phila. 39 plate.

##### *Main Line Haulage Locomotive*

- (1) Jeffrey Type B.D.M., Class 30 main line haulage locomotive; approval 1510; Jeffrey Mfg. Co., Oct. 12, 1925. The following batteries are optional: 110 cells Phila. 39 plate; 110 cells Exide 33 plate; 117 cells Exide 33 plate.

##### *Power Trucks*

- (1) Mancha power tank; approval 1506; Mancha Storage Battery Locomotive Co., May 5, 1924. The following batteries are optional: 110 cells Phila. 29 plate; 110 cells Phila. 31 plate; 117 cells Phila. 27 plate; 110 cells Exide 27 plate; 117 cells Exide 23 plate.

- (2) Mancha power tank and gathering locomotive; approval 1505A; Mancha Storage Battery Locomotive Co., June 21, 1926. Battery, 117 cells Phila. 19 plate; 56 cells Phila. 35 plate; 56 cells kw. 35 plate; 56 cells Exide 29 plate.

- (3) Jeffrey power truck and main-line haulage locomotive; approval 1510-C; Jeffrey Mfg. Co., Dec. 31, 1926. Battery, 117 cells Phila. 39 plate.

- (4) Mancha non-propelled power truck; approval 1514; Mancha Storage Battery Locomotive Co., Dec. 18, 1926. The following batteries are optional: 110 cells 27 plate Exide; 117 cells 23 plate Exide; 110 cells Phila. 31 plate; 117 cells Phila. 27 plate.

- (5) Jeffrey power truck; approval 1515, Jeffrey Mfg. Co., Dec. 28, 1926. Battery, 117 cells Phila. 27 plate.

\*This includes all batteries covered by the original approval or extensions of approval prior to July 1, 1928.

##### *Tandem Locomotives*

- (1) Jeffrey tandem locomotive; approval 1518; Jeffrey Mfg. Co., Nov. 21, 1927. Battery, 110 cells Phila. 23 plate.

#### PERMISSIBLE SELF-CONTAINED OXYGEN BREATHING APPARATUS AND GAS MASKS

##### *Approved Under Schedules 13 and 14A Oxygen Breathing Apparatus*

- (1) Gibbs mine-rescue breathing apparatus; approval 1300; Mine Safety Appliances Co., Jan. 15, 1920.

- (2) Paul mine-rescue breathing apparatus; approval 1301; American Atmos Corporation, Jan. 15, 1920.

- (3) Fleuss-Davis Proto apparatus; approval 1302; Siebe, Gorman & Co., Feb. 7, 1924.

- (4) McCaa mine-rescue breathing apparatus; approval 1303; Mine Safety Appliances Co., Aug. 31, 1925.

##### *Gas Masks*

- (1) Burrell ammonia gas masks; approval 1401; Mine Safety Appliances Co., April 10, 1920.

- (2) M. S. A. self-rescuer; approval 1402; Mine Safety Appliances Co., March 6, 1924.

- (3) All-service gas mask; approval 1403; Mine Safety Appliances Co., July 1, 1925.

- (4) G. M. D. ammonia gas mask; approval 1404; Mine Safety Appliances Co., March 10, 1926.

- (5) La France ammonia gas mask; approval 1401; American La France Fire Engine Co., June 23, 1927.

- (6) G. M. D. ammonia gas mask; approval 1406; Mine Safety Appliances Co., Feb. 14, 1928.

## MODEL MINING NUMBER

*Mining methods, preparation and coal geology of Alabama will be covered in the Eighth Annual Mining Number of Coal Age—October issue.*

*That producers in this flourishing district are alive to the importance of this issue is indicated by the following excerpt from a letter just received from a well-known Alabama operator:*

*"Will be very much interested in seeing the Alabama issue and know that it is going to create lots of interest in this district."*

# COAL AGE

Published by McGraw-Hill Publishing Company, Inc.

JOHN M. CARMODY, Editor

NEW YORK, SEPTEMBER, 1928

## *A pound of dust to a shovel of coal*

**A**N INCREASED yield of gas of 20 per cent and of ammonia of 35 per cent is said by Prof J. W. Cobb, Leeds, England, in his address before the British Association for the Advancement of Science, to have been obtained by the use of carbonate of soda and calcium carbonate respectively in the coking process as catalysts. Somehow the presence of sodium and calcium carbonates caused certain of the elements to combine otherwise than they would have done, thus increasing the yield.

The cokes produced also could be gasified by steam with far greater rapidity than cokes otherwise manufactured. They showed also a power of reducing carbon dioxide to the monoxide, which may be of great value to the gas producer.

These experiments were under laboratory conditions. They may, therefore, be misleading, but surely that fact should not be untested long, for the first properties mentioned may chance to give the final blow to oil-enriched water gas.

If, on the other hand, the other properties rather reverse the situation and make coke-made water gas more popular, it may nevertheless be fortunate, for the increased yields may make benzol a cheaper and therefore a more adequate competitor of gasoline or make artificial gas a better rival of the natural product at distances remote from the gas fields.

There are other catalysts, such as lime and iron oxide, that have similar effects. About 5 per cent added will have favorable results. After all, the addition of limestone in the mines as rock dust may increase the reactivity of the coke made and cause it to yield more ammonia, and the whitened coal will be welcomed on the market as a super article. The sulphur in the iron may be decreased also by the formation of calcium sulphate in the coke, for the calcium and sulphur would be in immediate contact.

It would seem advisable that the possibilities be duly weighed by those who are seeking to advance the interests of the coal industry. All roads do not lead to low-temperature carbonization or to hydrogenation of coal, which today seem difficult methods for establishing coal on a better basis.

Too many of the schemes that have been proposed to that end would seem beyond the wildest of dreams; they demand expenditures altogether

out of proportion to the value of the product and the volume of coal to be treated. Here is something more modest, more direct. With a small expenditure, its validity may be ascertained. Surely this modicum of effort should not be too great for the coal industry to undertake.

## *Clean coal and working time*

**I**N EVERY industry small imperfections in the product that are overlooked during periods of active demand become trade barriers when sales lag. Every coal man has experienced this. Sometimes complaints about dirty coal are the best barometers of the market as well as of human nature.

Each operator meets the situation in his own way. Some scold the superintendent, foreman, miners and tippemen and wait for the market to change. Others, however, go to the root of the trouble and install adequate preparation plants designed to give permanent relief.

Almost without exception those who have done this during the past few years have experienced an improvement in working time and an increased net realization.

## *Safety days and safe ways*

**F**ROM early June until late September each year first-aid and mine-rescue men are brought together in company, district, state and international competition. In this way thousands of men throughout the mining regions have their attention focused for a limited time on a variety of aspects of safety practices. In some cases men have trained throughout the year either in first aid or mine rescue.

Too frequently, however, training has been applied hastily and largely in order to insure company representation in the meet. The real difficulty comes, therefore, when the enthusiasm of competition has passed. Men return to their routine duties. Quite naturally they relax and let down a bit. After all, only a small percentage of the employees of any mine have participated as members of a competitive team. All the more reason why an effort should be made to maintain such enthusiasm as has been aroused. This responsibility lies heavily on operating officials.

If, apart from having men ready to meet accident emergencies, the real object of training is to direct men's thinking toward safe practices as a regular part of their work officials cannot afford to let down. Above all others they must keep constantly before them the widespread hazards of their operations. Inspection, supervision, training must go on. Safety days are admirable and inspiring; safe ways bring results that are more permanent.



## A plea for progress

IT IS said by a well-known contemporary writer that members of a major political party run not with the hope of gaining office—but for the “sheer joy of running.” Sheer joy of running must be the sole reward of many coal operators today, who pursue a policy of waiting for the better times “just around the corner.”

That everything must either progress or slide back is a fact which must be squarely faced. Facing this fact we arrive at what? Conflicts between owner and worker perplex the industry. Efficient production eludes attempts to secure it. Marketing of the product yields unsatisfactory returns. For the operator at a loss when confronted by these problems the modern genii of co-operation between enlightened capital and understanding labor, mechanization and intelligent, foreseeing management are ever ready to be summoned. Failure to invoke their aid is to waste a priceless natural resource.

The operator who is confronted by the difficulties of high cost, low sales realization and labor and marketing troubles may proceed on firm footing toward the goal of understanding with labor, use of modern production methods and well directed sales efforts or, failing in this, must flounder hopelessly in a mire of waste. There is no middle ground.

## Their Menu and Ours

ON THE back of one of the menus of the Pennsylvania Railroad dining cars recently was a statement showing the progress of the railroads from 1919 to 1926. It would seem that the railroad officials would, like Shakespeare's Brutus, have their patrons “chew upon this” without having it marked down in the score. Looking at the statement it would seem that the bituminous coal industry could put one at least as good on the backs of its menus if it had them. Tabulating the recital it runs as follows:

### MILESTONES OF RAILROAD PROGRESS SINCE 1920

	1920	1927	Gain, Per Cent
Freight locomotives in bad order.....	24.5 per cent	16.2 per cent	33.8
Freight cars in bad order.....	7.0 per cent	5.9 per cent	15.7
Freight car daily mileage.....	25.1 per cent	30.3 per cent	20.7
Freight train, average.....	36.6 cars	46.5 cars	27.0
Freight train tonnage, average....	708 tons	778 tons	9.8
Car shortages.....	Severe	Practically eliminated	

Figures for the coal industry paralleling those for the railroads are not available. Some day, it may be hoped, they will be. Meantime, comparisons cannot be made of the decrease in the percentage of

equipment in bad order or of the increase in the mileage of cars. Nor can the increase in the number of cars in a train or in the size of the load carried be compared. But augmentations of efficiency in bituminous-coal mining can be computed and in some instances they are even larger and more significant than those recorded regarding the railroads. Thus the tonnage per man is an index of efficiency; so are the output per mining machine, —the percentages of coal cut by machine to all coal produced. Strip-pit mining is economical of labor. Its progress is an index of efficient operation both as to production per shovel and percentage of coal obtained by stripping. The tonnage per mine also is an indication of efficiency. These are the figures for 1919 to 1926 wherever they are available and from 1918 to 1925 wherever they are not:

### COMPARISON BETWEEN EFFICIENCY IN 1919 AND 1926

	1919	1926	Increase, Per Cent
Average tonnage per man per day in all kinds of bituminous-coal mining.....	3.84	4.50	17.3
Average tonnage per mining machine per day in underground bituminous - coal mining.....	17,545*	20,895†	19.1‡
Percentage of underground coal cut by machine to all coal mined, bituminous-coal mines.....	59.2	71.7	21.1
Number of tons produced by strip mining, bituminous coal, per shovel, in year stated.....	30,030* 19,634	43,370† 41,275	44.4‡ 110.2
Percentage of bituminous coal stripped to all bituminous coal mined.....	1.2	3.0	150.0
Average daily tonnage per bituminous-coal mine exclusive of wagon mines.....	265.1	371.6	40.2
*1918. †1925. ‡1928 to 1925.			

The year 1918 was for strip shoveling a year of expansion, but as none of the plants had picking tables the stripped coal got a bad name. So in 1919, when the market slumped, the tonnage stripped declined heavily. It seems fairer, therefore, to quote both figures. One must remember that in 1918 coal was only beginning to be loaded underground mechanically; in 1925 a large quantity—6,243,104 tons—was so loaded. Here is where the improvement has been most noticeable but where from lack of statistics tabulation is not possible.

The progress in the coal industry from a technical standpoint has been extremely speedy. In a rapidly expanding market this would have been of great profit to the coal operator, but, with only a slowly increasing fuel demand and with a severe and, on the whole, unsuccessful competition with substitutes, that technical progress has contributed not a little to the instability of the coal industry, as economists who have studied the situation have frequently stated. The railroad industry has advanced but so also has the industry of which it is the chief customer.

# NOTES

## *From Across the Sea*

**A**S a nation conservatism has marked our development of the coke and gas industries. We have for many years obtained our inspiration from abroad—Belgium, France and Germany. Consequently, it may be well to keep in touch with what is being done in foreign countries, so that we shall not trail too far behind them.

The Ruhr coal producers, of Germany, for a long time have been largely wasting the gas from their coke ovens, of which they are producing from 318,000,000,000 to 353,000,000,000 cu.ft. annually. The Actiengesellschaft für Kohlenverwertung (Coal Utilization Co.), says the U. S. Department of Commerce, recently was established by these producers to market or otherwise utilize this gas, and perhaps their efforts in this direction may act as an inspiration to American industrialists though the status of the latter is somewhat different, for less gas is being wasted in the United States.

This Coal Utilization Co. has agreed with the Province of Westphalia to supply its entire gas requirements, which for the next few years will not exceed 8,750,000,000 cu.ft. annually. It will be seen that this is only a small part of the gas actually produced. There is no question in this case of capacity to meet peak loads. Moreover, the ovens are already constructed, and the gas will be manufactured whether sold or merely wasted, so anything over the expense incurred for the pipe line and the cost of handling the gas will be profit. That is not the best kind of marketing, it is true, but the situation is one that encourages a somewhat more lavish expenditure for piping than would be justified if enough ovens to provide for the peak load had to be provided.

One cannot assume offhand from this German example that in the United States it would pay to erect coke ovens at the mines with the direct purpose of distributing gas over so large an area as is purposed in the Ruhr region. There are not wanting, however, in this country natural-gas men who anticipate that they will manufacture gas at the mines as soon as the natural gas fails, but they expect to use the lines and rights of way of which they are already possessed.

**I**T HAS been stated as one of the disadvantages of piping gas from plants at the mines that the lines will have to be extremely large because of the great variation in the demand for gas from season to season. Where the ovens are already built or the pipes are already laid this seasonal problem gives less trouble. Use, however unsteady, of gas and pipes is advantageous and the

main endeavor is to find some means of using the excess gas at off-peak times.

The gas will be supplied in the Ruhr projects, says the Department of Commerce, either through long-distance pipe lines of the company or direct from the coke-oven plants. The price to an industrial consumer who uses 4,375,000 cu.ft. per year will be about 20.2c. per M cu.ft.

The area that will be supplied will include the whole province of Westphalia excluding the Ruhr district and the cities of Muenster and Hamm. There will be two long-distance pipes, one from the Ruhr district to Altena, Plettenberg and Siegen, a distance of about 55 miles, and one from the Ruhr to Bielefeld, Minden and Hannover, about 120 miles. All of which is much less than a former proposal to send gas from the coal fields to Buffalo, N. Y., which from Pittsburgh would be a distance of 270 miles.

**B**UT, as will be seen, this scheme, unless it be extended to cover a larger territory than Westphalia, will not take care of the large quantity of gas wasted. A plant is being constructed at Duisberg-Meiderich for coal hydrogenation, and now a new company, the Ruhr Chemical Products Corporation, is being formed to be backed by 28 Ruhr industries representing 90 per cent of the present coal-mining capacity of the Ruhr district. It will manufacture nitrogenous fertilizers with the aid of coke-oven gas. The first plant, to be completed early in 1929 in Oberhausen, will have an initial productive capacity of 18,000 tons of mixed nitrogen annually. It will require upward of 75,250,000,000 cu.ft. of gas a year. Construction is to be commenced on a second plant within 10 months after the completion of the first. The gases will be separated by a catalyst under a high pressure and a very low temperature.

The Ruhr producers have in mind piping gas to Berlin, which is 300 miles distant. The municipalities which have their own plants do not welcome the introduction of the Ruhr gas so long as their plants continue adequate.

Another European development is the dry quenching of coke. Whatever may be said about the advantage of 6 or 7 per cent of water in the coal fed to the coke ovens there is no question as to the increased value of coke if free from moisture, yet the first act of the coke man when he has made coke is to pour water on it. Much of this water is evaporated but some remains. It is said that if the specific heat of coke averages 0.36 and if the temperature of the coke leaving the furnace is 1,800 deg. F., the heat wasted in quenching the 44,376,586

tons of byproduct coke made in 1926 would be equivalent to the heat value of about 2,250,000 tons of coke, or more than 5 per cent of the entire production.

It is to save this heat that dry-quenching equipment has been installed at the Victoria Mathias Colliery, in Essen; at the Forges et Acieries de la Marine et Homécourt, at Homécourt, France; at the Municipal Gas Works at Rotterdam-Keilehaven and at Utrecht, Holland; at the Karolinenschacht of the Witkowitz Steel Works, Czechoslovakia, and several other points.

The process was devised by the Sulzer Brothers at Winterthur, Switzerland. The coke is charged still glowing into a sealed cooling chamber, and air is circulated through the system by a fan, that system including two boilers, the water in which is thus raised in temperature so that steam is formed. When the coke is first admitted it is burning, and the current of air augments the combustion, carbon monoxide and carbon dioxide being formed. Soon, however, the gases become inert. Numerous tests show that only about 0.04 per cent of the coke is burned.

Not only is heat saved but the coke is dry and therefore more desirable, there are less fines and the coke is less friable. Then also the damage done to equipment and plant by the water is avoided.

Coke when cooled suddenly from 1,800 deg. F. to atmospheric temperature contracts suddenly and unequally. As a result breeze is formed, and the strength of the coke is so greatly reduced that it will crush and abrade readily in the furnace. In a test made at the Mathias Stinnes Colliery the breeze content in dry-quenched coke was found to be 1.18 per cent and in water-quenched coke 1.68 per cent. Thus 42.4 per cent more breeze was obtained with water quenching than with dry quenching. Other tests showed 35.6 and 29.4 per cent. At Keilehaven with water quenching 46.2 per cent of the coke went over a 1½-in. screen and with dry quenching as much as 62.86 per cent.

**F**INE coke and dust lower the output of the furnace, for they show greater resistance to the blast. Ill results also accompany the formation of dust pockets.

Dr. Mueller in *Glueckauf* declared recently that the saving of coke after the introduction of the dry-cooled product was 4.17 per cent. The Homécourt plant showed more regular and better action in the furnace when the gas-cooled coke was used. Furthermore, the load in the furnace less frequently arched.

Edgar C. Evans, in a lecture delivered in England to the National Federation of Iron & Steel Manufacturers, asserted that when 6 per cent of small coke is eliminated the capacity of the furnace is increased 20 per cent. Obviously it is profitable to reduce the breakage of coke to a minimum and to reduce the friability of the coke so that it will not break in the furnace.

Dry coke decreases freight costs. A 35-ton coke load with 8 per cent of



moisture will have 2.8 tons of water that the furnace will have to remove, thus wasting heat, lowering capacity and causing difficulties in operation, though some will question the latter claim and say that the blast gases become too hot and effect too rapid a reduction when dry coke is supplied.

Dry quenching does not eliminate sulphur. Dr. Mueller found 0.914 per cent of sulphur in dry-quenched coke and 0.857 per cent in wet-quenched. The difference is only 0.057 per cent, and of that, the iron in the blast furnace will take only 50 to 60 per cent and the

iron in the foundry only 30 per cent. The finer sizes of dry-quenched coke up to  $\frac{1}{8}$  in. are a little less reactive than with wet-quenched coke, but the difference is less and less apparent with larger sizes.

Only in Rochester, N. Y., can a dry-quenching coke plant be found in this country. It was erected by the Dry Quenching Equipment Corporation, a subsidiary of the International Combustion Engineering Corporation.

*R. Dawson Hall*

## On the ENGINEER'S BOOK SHELF

*Mining of Thin Coal Beds in the Anthracite Region of Pennsylvania; 113 pp., octavo; by Dever C. Ashmead; Bulletin 245, U. S. Bureau of Mines; Price, 30c.*

For those who would learn about the methods of mining thin coal, this story of the anthracite working methods will be interesting whether the application has to be made to soft or hard coal. It appears just when the change is being made from hand to mechanical methods. It is therefore only the more welcome, though what it describes is necessarily experimental work on a small scale, scarcely elaborated into a system. Yet it is in the thin beds, which are more largely virgin, that the new methods can be put into effect as soon as experiment has at any mine determined the best plan for any definite condition. Standardization is less possible in the anthracite region than in any other because of the folding of the measures.

Mr. Ashmead describes many methods of mining adjacent beds and those which have big binders, longwall and semi-longwall mining, scraper mining, shaker chute methods and silting or flushing. Interesting figures given regarding the anthracite region are that 36 longwall or semi-longwall faces were being mined in 1925, that in 1926 the scrapers in use numbered 164 and the shaking chutes 103, that out of 106 collieries interrogated, 29 were silting while the other 77 deposit most of their refuse on the surface and do not use it to prevent subsidence.

It is interesting to note in connection with the origin of silting, which was first applied in America, that it was proposed by a Catholic priest in Shenandoah in the late sixties for the protection of the church of which he was rector as a means of preventing subsidence and the further cracking of the walls of the building. The president of the Philadelphia & Reading Coal & Iron Co., much questioned the value of the suggestion but ultimately adopted it with excellent results. Later it was vigor-

ously copied in many European countries but somewhat neglected in the United States.

Mr. Ashmead advocates longwall with backfilling as a safe method of removing coal under the Buried Valley and the Susquehanna and Lackawanna rivers. This method is being successful in work under the Illinois River and under the chalk beds of France, which Mr. Ashmead somewhat wrongly states are porous. Chalk is not porous but it has in it immense spaces filled with water due to the solution of the chalk. In mining it is necessary to avoid breaches that would let in this water.

\* \* \*

*Mine Lighting; by J. W. Whitaker, Lecturer in Mining, University College, Nottingham, England; 200 pp., 4 $\frac{1}{2}$  x 7 $\frac{1}{2}$  in.; Methuen & Co., London, England; price \$2.25.*

Mr. Whitaker has written a book on the whole subject of mine lighting from the properties of light, photometry and miners' nystagmus, to the more immediate, and, as some would say, more practical, phases of the subject. Mr. Whitaker is an advocate of the cap lamp as against the hand lamp, but says that miners accustomed to the flame safety lamp have become reconciled to working with a hand lamp and indeed prefer it. Those who have worked with open lights, as in Scotland, favor the cap lamp.

No attention is given in this book to the excellent American cap lamps available, perhaps because they are not on the "permitted" list of Great Britain. Of the electric lamps described only the Ceag, or Concordia, is known in this country.

Dr. J. S. Haldane has recommended the use of cap lamps as likely to reduce nystagmus. "It is a striking fact that in America," says Mr. Whitaker, "where hundreds of them are employed, nystagmus is practically unknown." It appears that this immunity is ascribed

to the fact that with the cap lamps the miner cannot see his lamp and that others cannot see it if they are traveling in the same direction, so the eye is saved from glare.

Nystagmus is like cancer. Its causation and cure are a matter of debate. Many interesting theories but no conclusions have been reached. One virtue of the electric cap lamp Mr. Whitaker has failed to state and that it is that it leaves the hands free to carry a flame safety lamp or other equipment for testing gas. This the hand electric lamp does not do. In the anthracite region in some mines the men carry a lamp in their hats and one in the hands, hanging the flame lamp up when they are not testing for gas.

\* \* \*

*The Working of Coal and Other Stratified Minerals; by H. F. Bulman; 338 pp., octavo; John Wiley & Sons; Price, \$8.50.*

In this book Mr. Bulman has essayed at least Anglo-Saxonism if not internationalism. France, Germany and Belgium receive short rations in the coal section of the book—a common chapter on their mining methods. Hitherto coal-mining books have been quite innocently sectional. The writer in the United States might look into Canada, and perhaps into the British Isles, but no further, and English books had something to say about Scotland and forgot what America was doing.

Judging from Mr. Bulman's selection of American colliery methods the rest of the material from India, South Africa and Australia and perhaps Europe may be regarded as representative. However, the author dismisses stripping in the United States in four lines but gives the strip pit at Yallourn in Australia eight pages. This, it is true, is a wonderful stripping because of its large machinery and lignite 137 to 206 ft. in thickness, but as there is only 20 to 38 ft. of overburden the problems are readily solved, for with such a seam any costs can be met.

It might have been illuminating to have described an operation where some 30 ft. of overburden is removed for a 2- or 3-ft. seam and where the overburden is cast on one side and not removed to a dump.

At Yallourn the surface material is carried from the stripper by a 4-ft. rubber belt to a stacker which runs on a radial road. Where rock occurs it is crushed by rolls set 6 in. apart. Two Bucyrus shovels, one with a bucket of 2 $\frac{1}{2}$  cu.yd. and one with a 3 $\frac{1}{2}$ -yd. bucket, and a Ruston shovel with 9-cu.yd. bucket load overburden and coal.

Reference is made at the end of the volume to the mining of iron ore in Great Britain and Lorraine but not in the United States; to the Scottish oil-shale mines, to rock-salt and potassium-salt mining and to quarrying. This part of the volume seems rather promiscuous and occasional. The United States is entirely overlooked except as to the Vermont marble quarries.

# *The BOSSES Talk it Over*



## *Costly Electrical Repair Supplies*

### *Can the Quantity Stocked Be Reduced?*

SOUNDS of argument disrupted the satisfied atmosphere which settled over the super's office after he and Mac had finished discussing the success that was attending their efforts to provide for proper inspection and overhauling of equipment. It ceased as Shorty and the master mechanic entered, only to be resumed with Jim and Mac as impromptu referees.

"Say, hold on," said Jim; "you two usually get along all right. What's the matter now?"

"It's like this," Tom, the master mechanic, replied: "the Old Man is trying to reduce the amount of supplies that each mine ought to carry. At the same time he is trying to put in a plan whereby Shorty here and the other electricians will report to a foreman, who will be boss and give him a lift when anything in the nature of a special job comes along. Right now I'm trying to convince Shorty that he doesn't need all those extra parts he has on hand."

"Well, now, I'd heard about that," said Jim, "but you know we sometimes have a hard time getting stuff when we use what we have, and it still occurs

when all we have to do is order it from the warehouse. As for him reporting to you, that's O.K. as far as I can see. You boys at headquarters have a chance then to find out just what we're up against. But I'd still like to know just how this supply business is going to work out for Shorty."

"We've planned something like this," Tom replied. "The amount of stuff we have on hand here will be cut down, sometimes to as low as one extra in the case of a motor armature. We're going to put in truck service between the main warehouse and the mines and will guarantee prompt delivery. In addition, it will enable us to take heavy jobs—welding jobs and general overhauling jobs—into the machine shops without delay, where we're better equipped and can work on them a lot easier. We figure that the saving in interest on the money tied up in supplies that aren't used for a year at a time sometimes will more than pay for the truck service, and this saving together with that of doing big jobs in jig time will run into money."

*Do you think that a foreman in direct charge of the mine electricians can help them by receiving daily reports and going directly to those who need him most?*

*What means of regulating repair parts will keep the quantity on hand at a low figure?*

*Do you think a definite understanding between the mine electrician and the warehouse and central machine shop will cut down the time a machine is out of service?*

*What means of reducing supplies and co-operating with the central shops do you use?*

**All foremen and superintendents are urged to discuss these questions  
Acceptable letters will be paid for**



# Supplies Problem Seen From Many Angles

## Procrastination May Cause Heavy Loss of Mine Materials

**P**OSTS and cross timbers should be taken out (where possible) immediately after all the coal has been extracted. To let these stand, in some cases even for an hour or two, may mean the loss of some timber which otherwise could have been taken out before they were broken. The hazard of extraction in most cases decreases if they are taken out promptly. This should be done with the use of a post puller in the hands of an experienced person under the supervision of the mine foreman or assistant or at least under their specific instructions.

Ties and rails in many cases are taken out by the miner after his last car has been pulled out. Where falls are being made this could be done by parties making the falls. In cases where track has been laid in development work and is not to be used for some time it frequently pays to remove it for use elsewhere. I have found that the most economical way is to take a car to within one length of the extreme end of this track and raise the track up with a lever or jack, and knock the ties off with a hammer. After pulling the spikes out and putting them in a keg put the ties and fishplates inside of the car and the rails on top. Move the car back one rail length and proceed as before.

This reduces the amount of labor to a minimum, as material does not have to be carried far, also by knocking the rails off it loosens the spikes and makes them easier to pull out. Line material should be taken out by the use of the car, prior to the extraction of the track, and should be sorted and placed in some central point for re-use.

It is my opinion that it is not good for either the mine or mine officials to set a definite supply cost, as there are so many things that may interfere. For instance, developing into unknown roof which may or may not require considerable timber. Excess water may appear that would require the installing of pumps and pipe lines.

If mine officials watch material it is better to get it as needed rather than to put in a certain amount per ton of coal mined. I have found in my experience that part of the neglect of material is due to most men, including the bosses, considering materials too cheaply.

A good way to impress the value of this material is to make a list showing the cost price of each. Give one of these lists to officials in the mine and have them show it to the timbermen, roadmen and men working on trolley lines, pipe lines and pump and motor repairs. This also will give the bosses something to figure from. For instance, if certain rail is worth \$4 it would be better to leave it under a fall than to spend \$5 or \$6 to recover it.

The distribution of supplies is an individual problem for each mine. It is wrong to delay the coal haulage to handle supplies. Supplies should be delivered at night or after the shift is finished. There are cases, however, when the haulage may have some free time and it would be a saving to put the supplies in on running time.

In all cases a supply order should be made out and checked when filled.

A. A. ALLAN.

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## Time to Save Supplies Is Now

**T**HE best time to recover supplies is immediately after they have served their purpose. Rails and ties often are covered with falls if left lying in old rooms and headings and are either

### What's the Answer?

*What would you do if you were faced with the problem discussed by Jim and Mac on the opposite page?*

*How would you handle it? Letters that are accepted and published are paid for.*

lost or costly to reclaim. Many times these things are neglected on account of some other jobs that the foreman might think are more important and the day force has been cut until too few men remain to do both at the same time.

If rails and ties are not gathered immediately men will lift pieces out, probably near the entrance, and these breaks must either be repaired or the rest of this material must be carried or dragged when it could have been loaded onto trucks or cars. Mac says: "If I could get a chance to gather up some of the supplies left in those sections we've got standing, we would have plenty." Here we have a real condition for consideration.

I think it is one of the greatest errors in coal mining to have room pillars or heading stumps standing after the solid coal has been worked out, tying up wire, hangers, rails, ties and other material. The quickest and cheapest way to recover these supplies is to finish up old honeycombed sections. I have known of cases where sections have been left like this and material tied up or taken out only to be replaced at a great cost just to recover the coal that was left.

In one case a mine foreman was ordered by the superintendent to re-lay about 3,000 ft. of track into a heading

where he (the superintendent) had taken out the solid coal when he was foreman. Nothing but the heading stumps were left. The rails had been taken to work out other solid coal. Rock falls had to be cleaned up and the water ran down the middle of the road because the sides were dirty. The coal was low, and it is not necessary to say that this was a poor piece of mining and wasteful when we consider that besides the extra cost of re-laying this track the water ate away the rails and bonds so they could not be used again. That could have been avoided if these stumps had been drawn at the proper time.

This is only one of many experiences I could relate to support my opinion that the best way to keep supplies in constant use is to concentrate the mine workings and recover all supplies in finished sections immediately.

One good system of distributing supplies that I have seen put into practice was in a large mine in the Pittsburgh region. Each assistant foreman or fireboss carried a small pad and wrote orders for props, caps and other material as the men gave them during visits to working places in the day time. They also made note of switches, clay, lumber and other material that needed to be picked up and taken to other parts of the mine where the daymen could use it without having to lose time to go after it or wait for it. These slips were left by each one on the mine foreman's desk and he would rewrite them on a larger sheet and give it to the night foreman, who would have this work done on his shift. In case any part was left undone at night he would leave a slip for the day foreman specifying the amount of work not done and why. It is not an uncommon thing in many mines to see a load of props left in the gob in some rooms because they were not the proper length for that place. An intelligent system of distribution would avoid this.

J. T. JONES.

Box 33, Sagamore, Pa.

## Definite Cost for Supplies Declared to Be Difficult Goal

**J**IM and Mac are up against a proposition which many mine bosses and superintendents have facing them today. This usually results from finishing a section when costs are high. Consequently the recoverable supplies are left for a future time, which often is never. Immediate recovery is necessary if waste from decay, falls of roof and flooding are to be prevented. Later recovery is more costly and much of the material may be lost. Most mines usually carry a few extra men on either the day or night shift who might well be employed in this work.

Setting a definite supply cost per

ton is difficult unless ample provision is made for emergencies. Careful checking of all supplies sent in the mine will often result in savings. Machine supplies should be issued only on receipt of a written requisition signed by the chief electrician, and charged to the proper machine or department.

J. A. R.  
*Sullivan, Ind.*

### Supply Cost Is Held Down By Competent Company Men

SUPPLIES are a large part of the cost of coal, but this figure can be kept low by proper use, preservation and recovery. An excess in any section should be avoided, as the unused portion will be laid aside and allowed to deteriorate or waste. Qualified and competent men with the company's interest at heart and working under definite instructions from their foremen are most likely to be economical in use and recovery of supplies. Consequently the foreman should be a man of good judgment and mining experience.

A definite supply cost may be of considerable practical value in that the foreman originally knows on just what basis he is operating. In addition, high-cost sections will become readily apparent, with the result that unfavorable conditions can be remedied.

Other aids to the economical use of supplies include regular supply crews, distribution periods and supply cars designed for the purpose for which they are to be used. Cars for delivering explosives, of course, should be especially equipped for the purpose.

H. T. WALTON.  
*Wolfpit, Ky.*

### Quick Recovery of Material Is Necessary for Results

FOREMEN usually know that all serviceable material should be recovered, and honestly intend to see that it is. However, they really fall down on the job through failure to have a self-acting system that will insure recovery at the right time and at a reasonable cost. If track and wire material are left in a place after it is finished, with the intention of recovering it when needed, it will be found to be a costly matter to get it, as slate may fall and cover up the track and ties, making it cheaper to let it lie rather than spend the money necessary to clean up the slate. Again, if the track is left lying for any length of time, a length of rail may be gone in the middle, and a car cannot be run to the face. This will necessitate pulling it back by hand at an added cost.

To avoid these unnecessary troubles it is best to recover all material as soon as a place is worked out, whether it can be used immediately or not. If not used it is better stacked up at some convenient point where the supply crew can get it in the future. If a regular wire

maintenance crew is available on the job, it probably is best to have them recover all their own material, placing all small pieces, such as trolley frogs and hangers, in their own supply shanty.

Good practice would indicate that the majority of supplies should be delivered by a night supply crew, as this allows the use of a motor and such cars as may be needed. At the same time they are out of the way of the day crews hauling coal.

It is probable that a certain definite supply limit cost can be arrived at, but in the end it might be an unwise move. In a short time the management, if working on a low estimate, would be hampering itself by not keeping sufficient material and tools on hand with which to handle the work efficiently. If the estimate was high there would be a tendency to accumulate supplies while the getting was good, storing them away against the hard times when the Old Man would really get "tight" and it would be impossible to get the necessary stuff. Too many supplies on hand are a bad thing, as there is a tendency to use the new and lay the old away for some future time.

IVAN J. ELY,  
*Acme, W. Va.* Mine Superintendent

### Loss and Waste of Supplies Blamed on Careless Officials

SUPPLIES can more easily go astray underground than in a surface operation. Too much optimism regarding the contents of the operator's pocketbook lends itself to neglect on the part of some responsible officials, who fail to take advantage of supplies already on hand.

Mac strikes the keynote when he says: "If I could only get a chance to gather up some in these sections we have standing!" This is a source of supply which is too often neglected.

As soon as a room has been driven its desired distance, the miners should be instructed to withdraw all usable supplies, such as timber, ties, rails, etc., storing them in such a position near or at the entry that they may be loaded and distributed to other parts of the mine as required.

A definite supply cost per ton would depend pretty much on local conditions, principal among which would be the nature of the overlying strata, but a definite supply cost could be struck under good roof conditions.

There can be no hard and fast rule in the method of distributing supplies, because extraordinary conditions arise from time to time in every mine, but where not more than two shifts of miners are employed all supplies should be distributed during the time the miners are out of the mine.

There is one method of supply which is often lost sight of, and that is in the ordering. This should be put on a competitive basis. As an illustration, assuming the mine to be split into separate districts, each district being in charge of a responsible official, one of whose duties is to see that an

adequate supply of material is kept on hand for the use of his men as required. At the end of each month, list each district separately under the name of the responsible official on a supply cost per ton basis, being careful to check any extraordinary condition which may affect any certain district. Call the responsible officials together monthly to discuss these supply costs. Within a very few months these officials will have a new perspective; they will have a goal to achieve, which should result in 100 per cent efficiency.

JOHN BENNETT.  
*Cassidy, B. C., Canada.*

### Prompt Recovery Is Necessary To Prevent Waste of Supplies

IN THE matter of supplies the Old Man is right. Mac will find it profitable if as soon as he stops a place he sends a crew of men into it and takes out all track and wire and has them brought back to the supply base. When getting out the supplies Mac should see to it that all spikes are drawn and put in containers. When the wire is taken down all clips, insulators, shucks and pins should be put in containers.

Just recently I found 30 30-lb. rails in some worked-out places. It cost me \$7 to clean the slate off and tear up the rails, \$8 to get the rails hauled out and \$6 to get 100 good ties and about 400 spikes. In other words it cost me \$21 to recover these supplies and the ties alone are worth more than \$30.

I don't think Mac will find it practical to standardize on recovering supplies. The point at issue is to get them as cheaply as possible. If it cost less to recover them than to buy new supplies they should be recovered; if not they should be left.

The motorman and brakeman should be held responsible for the supplies until they are delivered. If they are lost through carelessness they should be charged to them. If Mac knew he sent in four trolley frogs by the motorman which the latter lost, Mac should have turned the price of them into the office against the motorman. Thereafter the motorman would have been more careful of supplies entrusted to him to transport.

C. E. LIVELY.  
*Capels, W. Va.*

### Conservation of Supplies Is Management's Problem

A DEFINITE supply cost per ton should be decided on and not exceeded, in my belief. Recovery of mine supplies requires careful checking by foremen, electricians, firebosses and all company men. To furnish incentive to loaders working on pillars and in other sections, a small sum for supplies recovered might well be paid them. Careful, conservative men may be employed in this work and the small addition cost for their extra work would be more than realized in the value of supplies recovered. In addition the



supplies would be in the mine rather than on the outside awaiting order.

Careful and thorough workmen should comprise the day force, and shiftless and neglectful labor should be put on tonnage. Distribution should receive the attention it merits and all supplies put only where needed and all used before more are ordered. The responsibility for distribution of supplies and keeping an efficient day force rests solely on the management.

Distribution is important. For example, a wire switch and 40 hangers were ordered at a certain time. Two weeks later an investigation disclosed the fact that they had never been received, and as a result it was necessary to shut down a heading until more could be ordered. Four months later, in the course of clearing up a wreck, the missing material was found in the gob. Careless wiremen had thrown it off and it had become covered up.

Chains for cutting machines and track bonds were recovered under similar circumstances. Oil was sent around to machines by supplymen and the cans thrown off the trip without attention to where they fell, with consequent spilling and waste. Such wasteful habits have only one source—lax mine management.

Mine supply cars, locked if necessary, are handy things about the mine. However, it rests with the management to realize the greatest saving of supplies. The employment of good men will surprise the foremen with the saving in cost of supplies.

Sagamore, Pa. FRED GAUL,  
Assistant Foreman.

### Hold Departmental Heads Responsible for Supplies

**M**INE supply cost can easily be controlled at any mine providing the management has established the proper system in purchasing, storing and distributing the various pieces of equipment and materials needed for the economical operation of the mine. Many of the large producers of coal have established practically the same system used in their commissaries, except that they employ operating engineers who are skilled in practically every branch of plant operation. These technically trained men work in conjunction with all department heads from the general manager's office down, concentrating on the proper selection of new equipment and the economical use and distribution of the supplies purchased.

It seems from the tone of the conversation between Jim and Mac that they have no definite supply budget and little, if any, co-operation. They should get together and work out a system whereby a fixed cost per ton can be established on supplies purchased. Each of the department heads who is in any way connected with the distribution and installation of mine material should be held responsible for supplies used by the department he represents.

By placing the responsibility where it rightly belongs Jim and Mac will be on the right road to a solution of their difficulties and no fixed rule should be necessary to recover supplies that can be used again. A system for the distribution of mine supplies should be worked out to suit the particular mine where it is needed, as no two mines are alike and oftentimes a system in use at one mine would not be suitable for another.

Adrian, W. Va.

C. T. GRIMM.

### Standardized Day Force Not Considered Advisable

**D**AY labor costs furnish a debatable subject and one which varies in every mine. A standard force or labor budget will not supply a satisfactory solution in all cases, as the local conditions vary. Good labor can be retained only by regular employment, but if the tonnage falls, the day labor must be reduced to keep the costs down.

If I were in Jim or Mac's place and the tonnage fell off I should act as follows: As there would be fewer loaders employed and as some of the day force

are directly employed with them, the day force could be reduced.

Day labor can be roughly divided into three groups. In most cases one group can be reduced in proportion to the tonnage drop, another slightly and the third usually not at all. In many instances in slack times day labor can be given other employment. Equipment can be overhauled and alterations made. Even unskilled labor might be given employment at other duties so that when the tonnage does rise there will be no sudden rush on the day force.

W. E. WARNER.

Brentford, England.

### To Get Results Mine Foremen Must Co-operate With Labor

**T**HE super and Mac should go over their work together, having first ascertained why such a large number of loaders quit. Other things than the wage scale or drawslate may be the matter with Section 4. One grievance may be the slow turn, or the men may not have received courtesy at the company store and office. Bad conditions cause men to nurse grievances until a chance to obtain employment elsewhere occurs.

If Mac must absolutely reduce his day force it should be done so that his organization is not broken up. The wise foreman will avoid this. Before reducing the day labor factor to a budget or standard the super and Mac should visit nearby mines with similar conditions. As the wage scale does not vary greatly over a district, a friendly foreman may be able to render considerable help. A great trouble in using a standard budget system is lack of knowledge as to actual labor cost, but the plan should be given a trial by all means.

Production reports are practical and act as a check on the productivity of the dayman. To obtain best results, however, the foreman should have in his mind a fair idea of the amount of any particular job that can be accomplished per shift. The safety foreman, if one is employed, may well take over this work in addition to his other duties. We all remember that the small mines of other days had more efficient labor and lower costs, resulting largely from direct contact between foremen and workers.

Mac can help his day labor by prompt furnishing of supplies. This will avoid the time loss of waiting, as the average workman will not exert himself to obtain the needed articles. Mac also should co-operate with his day force, compare the output of different gangs and show that intentional waste of time amounts to dishonesty. However, workmen rightly resent "snooping" tactics, and they should not be employed. Men not efficient in one job should be changed to another, as they may be able to work very efficiently at another task. If a change in jobs does not effect results however, a discharge slip is the only remedy left.

JOHN W. JONES.

Altoona, Ala.

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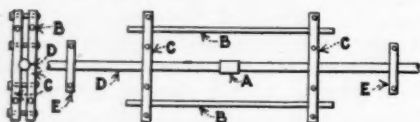
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# OPERATING IDEAS from Production, Electrical and Mechanical Men

## Simple Expedients Shield Lead-Covered Cables

An efficient method of protecting lead-covered cable from the injurious effects of corrosive mine waters, according to W. E. Warner, Brentford, England, is to sheath it in rubber hose—ordinary water hose of suitable size is satisfactory. In the case of shaft cables it can be drawn over them so as to cover the part where there is danger of corrosive action. In one instance where this simple expedient was used, although the shaft in which the cables were situated contained corrosive water, the lead sheathing was not affected.

In another case an armored lead-covered cable conveying current down a shaft was severely damaged by a falling rail which cut through the armoring and severely weakened it, though the insulation was not cut through. In order to take the weight off the damaged portion, two wooden tie rods were attached to the cable by wooden clamps placed above and below the injured part. These



Tie Rods Reinforce Injured Cable

rods were made of such a length that they took the weight off the lower part of the cable and transmitted it to the sheathing above the affected portion.

In the accompanying sketch A shows damaged part of cable; B, tie rods; C, clamps made of wood; D, cable; E, cable supports. The tie rods are first fixed in the top clamp by means of screws, the rods are placed through the holes in the bottom clamp and then the lower part of the cable is lifted by mechanical energy and the tie rods securely screwed in the bottom clamp. When the mechanical energy is relaxed the greater portion of the weight of the lower part of the cable is taken by the tie rods.

The damaged armoring was cut clear of the insulation, which was bound up with waterproof tape for temporary protection, enabling the cable to remain in service until repairs could be effected. As soon as possible the damage was repaired, necessitating removal of part of the armoring and sheathing as well as some damaged insulation. This was replaced afterward, but as the sheathing could not be made as mechanically strong in tension as before, the wooden tie rods were left in position after having been suitably painted.



## Thermal Relays Protect Motors Against Overloads

Calibration is retained and a safe overload capacity automatically permitted by a new thermal overload device which, according to H. N. Blackmon, general engineer, Westinghouse Electric & Mfg. Co., is rapidly replacing the makeshift overcurrent relay so often used for this work. The thermal device follows the heating curve of the motor, which means the motor will not shut down instantly in case of high, but harmless, overcurrent demands. The new unit is small, rugged, completely inclosed and easily adjusted.

Excessive current may or may not mean a motor overload. Heat in the motor winding does the damage and not the fact that the ammeter momentarily swings off scale. Motor temperature depends on the length of time the current flows, as well as on the amount of current. If either factor is small the other can safely increase and the machine will have the same temperature. The mass of iron and copper gives

thermal capacity to the motor and short high shots of current prove harmless because the generated heat is eagerly absorbed by the mass of relatively cold iron. The net result is a slight overall increase in temperature.

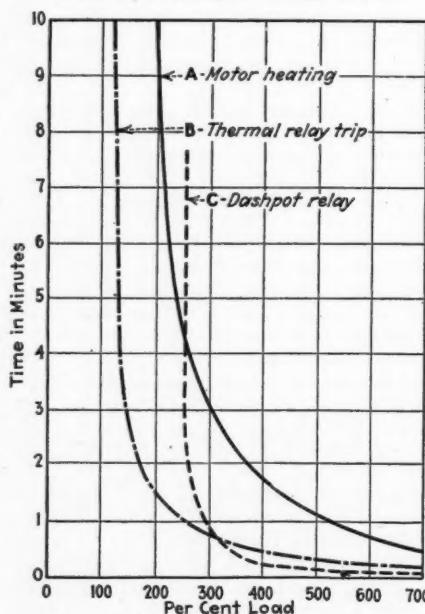
Continued high current is a different matter; the surrounding metal soon becomes saturated with heat and the machine temperature starts climbing rapidly.

True overload protection is given only by a device whose operating characteristic follows the heating curve of the motor. The overcurrent relay, which ordinarily acts instantaneously, is equipped with dashpots to delay its action to simulate the foregoing condition. In addition to the unstable calibration of such a device, the range is extremely limited. For example, it is necessary to bypass this relay during across-the-line starting, even though the high starting current flows but 9 or 10 seconds.

The thermal relay inherently reproduces characteristics similar to the motor-heating curve and sidesteps the faults of an artificially delayed magnetic action. Its action is shown in the illustration. The motor heating curve and the thermal relay curve track along together because each is approximately proportional to the square of the current. The characteristic of the magnetic dashpot type of relay is shown dotted for comparison, and differs widely from the motor heating curve. With the dashpot type relay set to trip at 250 per cent normal current, no protection is given for sustained overloads under this value. For instance, at 200 per cent load the dashpot relay would not operate, but the thermal relay would remove the motor at the end of 12 minutes. However, if the dashpot relay is adjusted to catch these lower overloads it acts instantaneously at high overcurrent.

The thermal relay avoids these compromises and automatically delays its action inversely as the current flowing. The higher the overload the shorter the time, as shown in the chart.

Motor and Relay Heating Curves





## Substation Change Cuts Bill \$8 Per Day

Not often is it possible to obtain measured figures of power saving in kilowatt-hours or dollars resulting from moving a substation closer to the center of load in order to effect better voltage regulation. Usually other conditions affecting the power consumption change at the same time, making it difficult to prove just what credit should be given to the substation move.

One instance where conservative figures of actual saving became available was at No. 11 mine of the Old Ben Coal Corporation, Christopher, Ill. On Jan. 11 of this year an automatic substation, installed on the surface about one mile from the main shaft, was put into service.

Before this all 250-volt d.c. power was supplied from a substation located near the main shaft. Building the new substation changed the transmission to 2,300 volts.

Records of power consumption for the old substation were available from readings of a watt-hour meter permanently installed in the a.c. feed. The new substation was fed through the same meter.

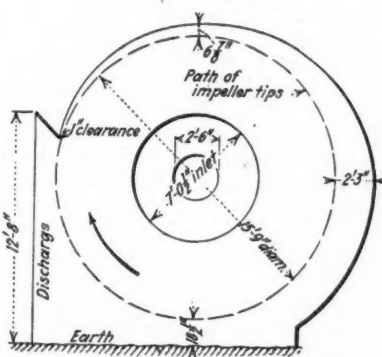
The measured saving per day has averaged 500 kw.-hr., which amounts to \$8. As the tonnage was increased somewhat coincident with the substation change, it is reasonable to assume that the actual saving is even greater than this figure.

In order to supply the main haulage near the shaft it is necessary to continue to run the old substation. Were it possible to shut down this substation and eliminate the losses therein, the saving would be much greater.

## Rebuilding Old Fans Helps Ventilation

That many mine fans were built without proper regard for the principles of design and construction is the contention of Ira A. Butcher, general master mechanic, Western Coal Mining Co., Pittsburg, Kan. This fact becomes evi-

Elevation of Fan



dent in examination of many of the older and smaller capacity fans in use. Mr. Butcher examined a number of installations approximately 16 ft. in diameter with the object of increasing their efficiency.

It was found that many of the housings were of wood and that intakes into the fan had square corners instead of curved lines, and various obstructions such as bearing supporting timbers and cast-iron spiders in the inlet. All of them had discharges which were too large for the volume of air handled, with the result that a strong wind blowing directly into the discharge would seriously interfere with the mine ven-

## \$5 AND MORE

Every man who gets ahead on his job finds new ways for meeting the day-by-day problems that arise.

It may be a new tool or a new way to use an old one, or it may be an improved method of mining coal or handling men.

Coal Age pays \$5 up for operating ideas published in this department.

tilation. Several were found in which carelessness in the design of the scroll led to the distance between the widest part and the impeller tips being much greater than that between the tips and the floor. This is admirably shown in the illustration. The discharge often made an abrupt break with the casing instead of coming away from it on a tangent.

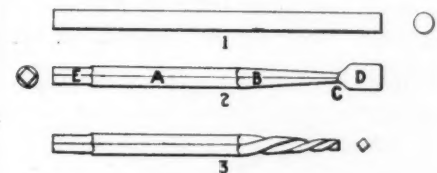
All of the above faults existed in the fans examined, and the problem was to change the existing installation to increase its efficiency. This was done in some instances by cutting down the discharge area. This remedy increased the water gage at 90 r.p.m. from 1.01 in. to 1.20 in. and fully justified the change. In another fan of 50,000 cu.ft. per minute capacity the inlet was enlarged after some study and the outlet cut down, with a corresponding increase in the water gage.

It was found that reduction in discharge area eliminated the eddies in the air stream and probably contributed to the increased efficiency. In another case it was found that rebuilding the scroll and slightly increasing the inlet resulted in over 100 per cent increase in the water-gage reading. Increased ventilating efficiency resulted in all cases. No data on change in power consumption were taken.

## Stud Remover Improvised For Emergency Use

A simple reamer for removing broken studs has been improvised by Harold Harwood, Covell, W. Va. Any blacksmith can make one in a few minutes from broken coil springs. Spring steel is used in preference to tool steel as it is hard enough without tempering and will stand a tremendous pull before breaking.

Referring to the accompanying illustrations, the piece of spring steel is forged to the shape shown in 2, the part B being made square with sharp corners and the small part of the taper at C of the same size as the hole drilled in the broken stud.



Twist Made in Two Stages

After the piece has been forged to the shape shown in 2 the square B should be heated—but not too hot—end D being held in a vise and end E twisted to the right to the desired extent at C. Part C should then be reheated and cooled, the twist being finished while heat is still in part B. If the twist is made all at one time without cooling it at C, this part, being smaller, will twist too much and the heavier part not enough.

After the reamer has been forged and twisted it should be allowed to air cool, after which it should be sawed or ground off at C. The finished piece should be as shown in 3.

## X-Rays Disclose Ash in Fuel

The use of X-rays to examine the structure and test the purity and quality of coal and other fuel has not received the attention such a process would seem to deserve, according to Alfred Gradenwitz, Berlin-Friedenau, Germany. Dr. Gradenwitz recounts the résumé of existing methods given by Paul Parandel at a recent meeting of the Office Central de Chauffage (Central Heat Bureau) of Paris.

The simplest method is based on X-ray photography or projection on a screen and will prove quite satisfactory in testing anthracite, bituminous coal and lignite. The purity of a fuel can be readily ascertained; a sufficiently powerful apparatus enables fragments 20 to 25 cm. (7.2 to 9.0 in.) to be examined on the screen. X-rays also are a ready means of testing pulverized coal, the coal being shaken and washed,

## Operating Ideas from PRODUCTION, ELECTRICAL and MECHANICAL MEN

after which the impurities settle to the bottom.

Another method makes use of a sieve with an aluminum bottom of 100 square sections. When each square contains a fragment X-ray examination is resorted to and the percentage of impurities calculated.

Radio physical and radio-chemical methods likewise may be used. The former makes use of an ionizing compartment, consisting of parallel paper laminae, which are made conductive. The air layers in the compartment will, under the influence of the X-rays, be ionized and become conductive by decomposition. A micro-ammeter indicates the current in the circuit. A sample is inserted between the X-ray tube and the apparatus. The X-rays will be influenced more or less by its opacity, which in turn depends on the ash content.

The coal sample should be of standard weight and the current and dimensions of the outfit should be kept strictly constant. A standard sample of highest purity is chosen and the corresponding micro-ammeter deflection observed. Other sample readings are then compared to this.

The radio-chemical method suggested by Parandel is based on the influence of X-rays on the rate of some chemical process, the process chosen being precipitation, under the influence of X-rays, of sublimate from an ammonium oxalate mixture in the form of mercury chloride.

The latter two methods are best adapted to the testing of coke agglomerates. Any standard medical X-ray apparatus may be used.

### Attention to Hoist Ropes Noted on Wall Chart

Jobs which have to be done infrequently are the ones most likely to be neglected. Changing hoist ropes, giving proper attention to bridle chains, and so on, are not exceptions. Perhaps the simplest method of insuring systematic attention to these items is by keeping a log of completion dates. The same chart can be used for a record of rope-tonnage performance, as is the practice of the Old Ben Coal Corporation.

Tacked to the wall in his office at West Frankfort, Ill., A. W. Spaht, outside superintendent and electrical engineer, has such a chart with a column for each mine. A copy of the column for the No. 8 mine, at West Frankfort, is reproduced on this page.

The chart is a print of a form made upon tracing cloth. As the items are taken care of at the various mines the dates are entered with pencil on the print. Instead of being hidden in a file the chart is on the wall, where it acts as a frequent reminder of the attentions necessary.

Illinois mines of the Old Ben com-

MINE NO. 8		
Hoist Rope Installed		
North Side - Overwind		
Date	Tonnage	Remarks
10-22-24	29 67 45	
10-15-25	11 99 78	Broken wires
12-28-25	22 32 87	
4-17-26	32 34 33	
10-24-26	18 33 79	
1-30-27	27 28 44	
12-17-27		
South Side - Underwind		
Date	Tonnage	Remarks
10-22-24	29 67 45	
10-15-25	27 32 46	
3-17-26	26 11 25	
8-18-26	33 17 60	
2-6-27	35 12 98	
2-15-28		
Hoist Rope Clamped		
North Side		
Date	Date	Date
4-17-25	10-24-26	
9-21-25	12-12-26	
10-15-25	3-13-27	
11-22-25	10-16-27	
12-28-25	11-26-27	
2-8-26	2-5-28	
3-21-26		
4-17-26		
6-18-26		
8-1-26		
9-15-26		
10-18-26		
South Side		
Date	Date	Date
4-17-25	10-12-26	
9-21-25	11-7-26	
10-15-25	3-13-27	
11-22-25	10-16-27	
1-3-26	11-26-27	
2-8-26	1-16-28	
3-17-26		
5-8-26		
6-24-26		
8-7-26		
8-18-26		
Bridle Chains, Clevises and Pins Installed		
North Side		
Date	Tonnage	Remarks
2-5-26		
South Side		
Date	Tonnage	Remarks
2-5-26		
Bridle Chains, Clevises and Pins Annealed		
North Side		
Date	Date	Date
May 1925		
2-5-26		
South Side		
Date	Date	Date
May 1925		
2-5-26		

One Column from Chart

pany are hoist operations of large capacity. Electric hoists and self-dumping cages are used. Men are handled by the main-shaft equipment.

The ropes are inspected each day by the hoistman or a mechanic. If any broken wires appear the top foreman is called. Reclamping is done every six weeks, counting only running time. Bridle chains are changed once a year. Those removed are annealed and placed in stock for the next change.

### Storekeeping Plan Reduces Waste

Every plant or manufacturing concern should have a centrally located storeroom. In addition, writes George C. Kuebler, storekeeper, St. Louis & O'Fallon Coal Co., Black Eagle, Ill., it is essential that a regular man should be on the job every day with a proper accounting system that will enable him to keep track of his receipts and disbursements and allow him to see at a glance how much material he has on hand.

Mr. Kuebler uses a card record to keep track of incoming material. On this card is entered a description of the material, the account the material is carried in, the company order number, the date of receipt of the material, the quantity received, the price per unit, and the total cost of the order. In addition, the quantity of the material issued is entered on this card each month, furnishing a quick method of ascertaining the quantity on hand. The prices entered also enable the storekeeper to compare the cost of future lots of the same material.

A disbursement sheet is supplied for daily use upon which the storekeeper credits his various accounts and charges items to operating distribution. It is then carried on his books, and at the end of the month the sheets are the basis of his report showing receipts, disbursements and balances on hand.

Supplies of similar characteristics should be grouped together, properly put in rotation according to their specified sizes and the shelves or bins stenciled. Ample space should be provided to permit buying and storing in case lots, and original packages should be kept intact to avoid unnecessary counting from the bins. All stock numbered parts are kept separately and in numerical order.

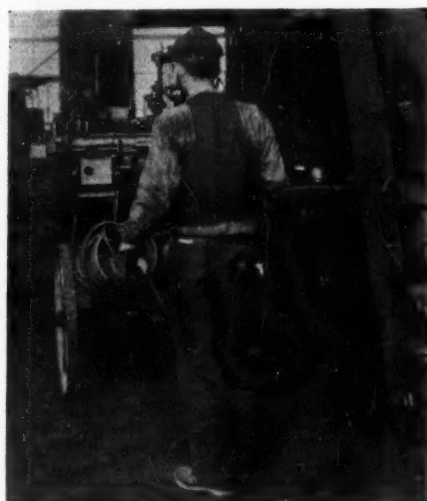
When any change of equipment is made the storekeeper can save his firm money by recommending disposition of the stock on hand. Ordering and buying should be in quantities to avoid excessive requisitions and handling of the same item. A separate shelf should be provided for minor, delicate or single parts in order that they may be found readily.



## Portable Carriage for Welding Equipment

As the oxyacetylene welding outfit is self-contained there is no reason why it should not be taken to the job if welding is the only repair operation involved or if the object of repair is too heavy for convenient moving. The carriage usually provided as a part of the welding equipment is such that the unit is not so portable as it might be and its use consequently is restricted to the confines of the shop in which it is installed.

This shortcoming may be overcome, as it has been at the mine plant of the



Moving to the Job

Buckeye Coal Co., Nemacolin, Pa., by constructing a special carriage—wide-tread wheels of 36-in. diameter, with handles of the wheelbarrow type, made of pipe. This carriage can be rolled without any great effort to any part of the plant, over rough or muddy ground. A small fire extinguisher is attached to the outfit.

## Spiral on Pipe Moves Rope to Sheave

Main haulage at No. 10 mine of the West Kentucky Coal Co., Clay, Ky., is over a single-track slope. From just inside the portal of this slope to the tippie, a distance of about 300 ft., there are two tracks, one for the loaded trips coming out and one for the empty trips returning. A single-rope hoist is used.

Before Richard Gregory, mine foreman, devised and installed the sheaving arrangement shown in the accompanying photograph much trouble was encountered with the rope, as the empty trip ran back onto the common track in the slope.

The two rails at the right in the photograph are those of the loaded track, which is in line with the single track of the slope. At the left is one rail of the empty track. The sheaving



Rope in Final Position

device elevates the rope and moves it sidewise onto the sheave, which is made from a mine-car wheel.

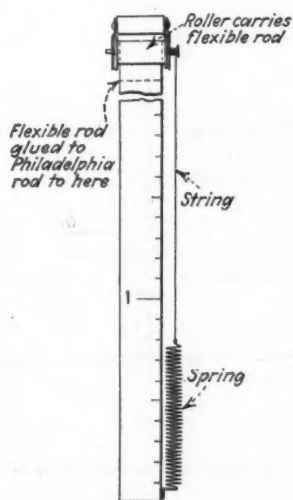
The spiral was fashioned from a  $\frac{1}{2}$ -in. rod and is fastened to a section of 2-in. pipe by having the ends bent and forced down into holes drilled in the pipe. Sleeve bearings are provided at each end of the pipe and these are kept well lubricated, so that the rope will cause the pipe to rotate.

## Minimizes Difficulties Of Level Running

Running levels over an underground track with low roof and frequent trips is a difficult proposition, according to G. N. Pfeiffer, Herrin, Ill. To minimize the difficulties encountered an ordinary 5-ft. Philadelphia rod has been converted to a direct-reading rod for all heights of roof within its range. A flexible pocket rod of the same length as the Philadelphia rod is placed on it so that the zeros coincide and is glued up to the point indicated in the illustration. The remainder of the flexible rod is then attached to the roller by a thumbtack.

The roller is attached to the top of the rod by a piece of 20-gage sheet steel 2 in. wide with holes punched for bearings. The roller carries the flexible rod and the extension of the shaft is a drum for the winding string.

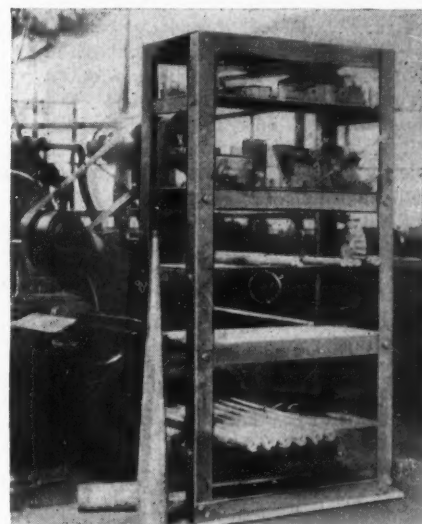
## Speeds Up Level Running



This string is fastened to a spring from an old window shade as shown. As the rod is extended it automatically unwinds the flexible rod and permits of a direct reading within 2 in. of the roof. When the reading is taken the spring automatically pulls the movable part of the rod down and at the same time winds up the loose part of the flexible rod.

## Rack Keeps Tools Handy

Many of the machine tools employed in shops of various kinds require a large number of accessories such as milling cutters, jigs, fixtures, mandrels and the like. If some convenient place for keeping these accessories is not provided they are likely to be lost or misplaced and much time will be consumed



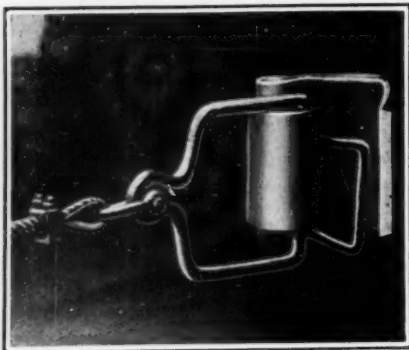
Tools Easy to Reach

in hunting them up and getting them ready for action. The accompanying illustration shows a large grinding machine in the Library Shops of the Pittsburgh Coal Co. together with the rack which has been built to hold various pieces of work and accessories such as jigs, fixtures and the like.

As may be seen, this rack is of simple all-steel construction, such as could be duplicated in almost any shop. It is extremely convenient, however, as may be judged from the number of pieces stored upon it. The important consideration about this rack is not so much its construction as the fact that it is placed close beside the machine that it serves and that consequently the various jigs, fixtures and mandrels are always close at hand and ready for use.

## Car-Retarder Hitching Is Easy to Work

In the accompanying photograph is shown the car-retarder hitching used at the tippie of the Rogers Elkhorn



Showing Hitching in Use at Tipple

Coal Co., Virgie, Ky. This hitching to the railroad car consists of a loop forged from 1½-in. stock and having a projection loop of ¾-in. material welded to the side.

The hitching is applied by hooking it sidewise over the coupler knuckle after the knuckle has been moved to the closed position and the coupling pin allowed to drop in place. The loop projecting from the side of the hitching prevents it from dropping off of the knuckle in case the rope is slacked. Unhitching is accomplished by jerking the car coupler lever, as would be done when uncoupling cars.

## Layout of Miners' Homes Depends on Ground and Class of Labor

THE types of houses erected in any mining community usually are governed by the nature and amount of ground available and the class of labor most likely to be employed, according to M. L. Jarrett, Huntington, W. Va. If plenty of level building ground is at hand a four-room single-story one-family house often is selected as the standard. Where building space is limited four-room two-story one-family and eight-room two-family houses usually are built on the bottom land and dwellings one room in width and three or four rooms long are erected on the hill-sides. This latter variety frequently is known as the "shotgun" type.

Eight-room two-family houses also are frequently built on the hillsides if the slope is not too steep. They present a better appearance if the front piers do not exceed about 6 ft. in height, with any necessary excavation made at the rear. One large company has built a number of eight-room two-story two-family hillside houses that are 16x60 ft. in ground plan. The interiors are the same but the exteriors are of four distinct types. Native whites prefer a large house; the tastes of foreigners vary. All nationalities, however, appreciate a large yard for gardening. Colored people, as a rule, are satisfied with smaller houses and are not so particular about a yard.

In any mining community the number of houses required will vary with the bed of coal being worked, the system of mining, the daily output, the efficiency of the plant and the kind of labor employed. One company with large mines and enjoying steady operation obtains an output of 16 tons per day for each four-room house. Some small mines fall as low as eight tons, with the general average probably slightly over 13 tons per house.

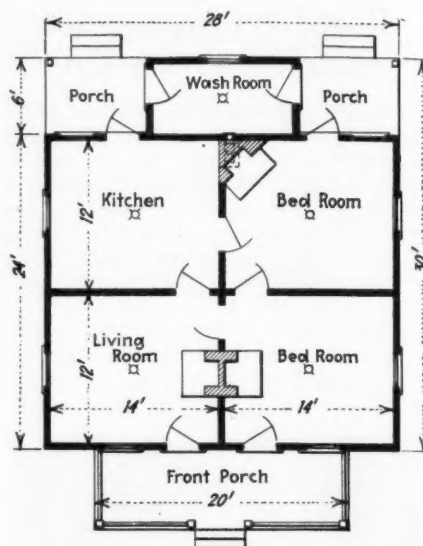
One of the most economical houses to build is the eight-room two-story two-family type, ranging in size from 28 to 30 ft. square, resting on piers 10 to 12 in. square. Concrete footings 18 in. square and 6 in. thick should be pro-

vided. Chimneys over 6 ft. in height should be carried on separate foundations. Two-by-eight joists are amply strong, studs usually are 2x4 in. and ceiling joists 2x6 in. for a 14-ft. span. A good grade of fir or yellow pine drop siding forms the exterior cover. Two coats of paint usually are applied. Sub-floors generally are necessary on the first floor. Roofing is commonly three-ply composition roll roofing.

All houses not having solid foundations should be underpinned. Lattice is often thought to present a better appearance. Interior walls are of wood lath covered with double-up wood-fiber plaster.

In the front rooms, brick-lined fireplaces are provided, while flue rings are put in other rooms. A separate flue should be provided for each fireplace.

Wiring generally is knob and tube

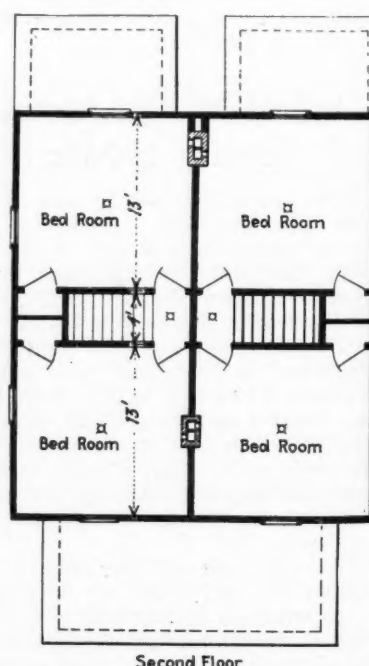
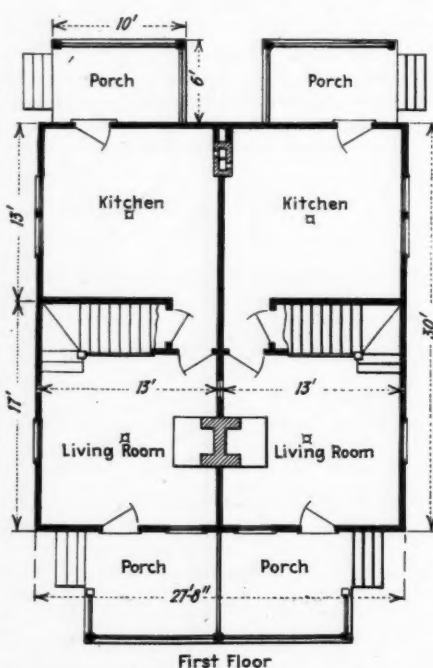


A Popular Type of Four-Room One-Story House

work with one drop cord in each room and hallway. When a flat rate is charged the current frequently is cut off during the day. As a general rule two windows are provided per room. Most houses are provided with small washrooms in the rear. Kitchen sinks may be provided, but bathrooms are not yet in general use in this type of dwelling.

In this day of specialization the builder would be dull indeed if he did not acquire some knowledge not available to those engaged in other occupations. By suggesting minor changes in the plans and specifications he can, in many instances, materially reduce the cost to the owner without detrimentally affecting the size, strength or appearance of the building.

A Standard Type of Eight-Room, Two-Family House





# WORD *from the* FIELD

## Industrial Store Men Flock to Cincinnati At Annual Meeting

Attended by managers and buyers of industrial retail stores from all of the Eastern coal-mining regions, the second annual convention of the National Association of Retail Store Executives was held at the Hotel Gibson, Cincinnati, Ohio, Sept. 3, 4 and 5. For the ensuing year, G. L. Carrier, of the Norton Coal Co., Nortonville, Ky., was elected president, and C. L. Steiner Union Supply Co., Uniontown, Pa., vice-president. R. D. Brooks, W. G. Duncan Coal Co., Greenville, Ky., was re-elected treasurer and Louis Spillman, editor, *Industrial Retail Stores*, New York, was elected secretary.

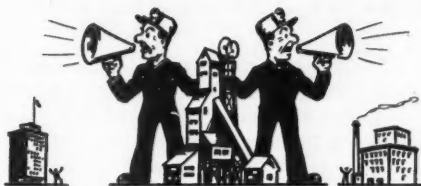
The first business session was called to order by President J. R. Sheridan, purchasing agent, West Virginia Coal & Coke Co. An address of welcome was delivered by C. W. Culkins, executive vice-president of the Cincinnati Chamber of Commerce. Following that, G. W. Sulley, of the merchants' service division of the National Cash Register Co., talked on "Better Retailing."

The program for the afternoon session offered a talk by W. C. Sporlein, Gillette Safety Razor Co., on the "Value of Display in Selling or Making Your Merchandise Sell Itself." Robert Nesbitt, of Reid, Murdoch & Co., spoke on "Merchandising From Above and Below."

The members were the guests of the Cincinnati Chamber of Commerce at dinner and later attended the Fall Fashion Review, an annual event in Cincinnati arranged by the wholesale trade division of the local chamber. The Wednesday morning session was concluded with a "Question Box hour" for members of the association only. This was presided over by H. A. Campbell, Fork Ridge, Tenn. The discussion of current problems was lively and sustained.

The final event of the convention was the "Front Porch Banquet" in the Gibson Hotel on Wednesday evening. John W. Cofer, controller, Consolidation Coal Co., New York, the speaker of the evening, chose as his subject "What Company Executives Expect of Industrial Retail Stores."

"The Consolidation Coal Co.," Mr. Cofer stated, "looks upon the industrial store not merely as an allied activity conducted by necessity to buy and sell merchandise for an adequate net return but as a vital adjunct to all of their operations, created and run primarily for the convenience, satisfaction and best interest of its employees. Approximately \$1,000,000 is invested in store buildings, fixtures and equipment alone,



John W. Cofer

not considering land values, etc., in our various mining communities. We believe the industrial store in this modern age should adopt merchandising and management policies similar to other large chain-store organizations. We concentrate our purchasing facilities and centralize buying power in one general purchasing agent, who is governed as to varieties of merchandise by the wishes of our general manager of stores.

"I question whether store managers realize the part they play in lowering mine costs. Do you know that one of the most expensive factors in cost is labor turnover? What causes labor turnover? Many times it is traced to the industrial store manager, who directly or indirectly is the cause of the employee's dissatisfaction, which reflects itself in his daily work, resulting in his quitting and necessitating his replacement at an exorbitant cost.

"Do you understand your duties as an industrial store manager? Do you ever have conferences with the executives of your company regarding store merchandising and management? If each store manager were called upon to explain the policies in effect in his store would the result show uniformity and standardization by companies or could we even find the same policies in each store within the division of a company?

"Think of the unfavorable reaction it causes among employees if one store of a company sells an article for 20c. and another store within the same division sells the same thing for 25c. The freight rate is the same. What satisfactory explanation can be offered to the dissatisfied employee? Hasn't he a legitimate

complaint and doesn't it reflect inconsistent merchandising management?

"Has your company set a uniform mark-up on all merchandise-departmentizing your stores where practicable? Do you have all your merchandise plainly marked as to selling price to avoid the feeling of discrimination among customers and mistakes on the part of your selling force?

"Do you inspect your stores the first thing each morning and during the day to see that your sales people have all the merchandise properly displayed and in an orderly fashion? Do you keep informed on the requirements of your patrons and are you governed accordingly in placing subsequent purchasing orders? Do you maintain proper records and statistics to show how many times you turn over your stock annually? Do you analyze the causes for merchandise moving slowly and in order to get a turnover give consideration to the interest charges accumulating on the investment and make the proper reduction in selling price to protect your company's interests? How often do you change the merchandise in your display windows, and do you insist upon the windows being washed frequently?

"Our company considers the first and dominate requisites of good store management to be politeness, courtesy, cleanliness judgment and unquestionable integrity, the latter not only with our company but equally with our patrons.

"Can each store manager say that once a week he holds a conference with his selling force for fifteen minutes before or after store hours for the purpose of teaching salesmanship and pointing out mistakes that have come to his notice to prevent a repetition? If not, why? What can reduce your sales more or cause more dissatisfied patrons than an impudent, unscrupulous and unsympathetic sales person?

"Do you insist upon your sales people serving each person in turn, regardless of age, sex, color, likes or dislikes, and being courteous whether a sale is consummated or not? If not, how do you expect to perpetuate the good will of your company and bring community satisfaction? Are your delivery men taught the virtues of accuracy and accommodation?

"Do your bookkeepers realize the importance of absolute accuracy in the rendition of monthly statements of account to credit customers in order to prevent dissatisfaction and the feeling of overcharging or distrust? Is all the merchandise received in your custody from the manufacturers checked carefully to detect shortages and damages?"

## Operators and District Unions in Illinois, Southwest and Central Ohio Agree to Substantial Wage Reductions

NEW wage contracts in Illinois, the Southwest and central Ohio—all involving substantial reductions—have been agreed upon by representatives of the affected operators and district organizations of the United Mine Workers within the past few days. This action is the response of employers and employees in union territory to the decision of the international policy committee of the union, taken July 18, releasing the district organizations from adherence to the Jacksonville scale as the basis of new agreements.

In Illinois, after prolonged negotiations, the committee of operators and miners on Sept. 1 announced an agreement upon a new scale which reduces the basic day rate from \$7.50 to \$6.10 and the tonnage rate from \$1.08 to 91c. This contract, subject to ratification by the members of the union, is to become effective Sept. 16 and run until Mar. 31, 1932.

The Southwestern and central Ohio scales cut day rates to the \$5 level of 1917. In addition to these district negotiations, an agreement has been entered into between the Rocky Mountain Fuel Co., operating in northern Colorado, and local representatives of the union. This agreement increases day rates from \$6.77 to \$7. Late reports from the West indicate that other operators in that section who have been running open shop for several years have no intention of renewing relations with the union, although some fear is expressed that the radical element in Colorado labor circles may again stir up trouble as it did a year ago.

Spokesmen for the union in western Pennsylvania are quoted as saying that a number of operators in that district have signed up with the union, but details as to the companies involved have been withheld. The major producers in that field, including the Pittsburgh Coal Co. and the Pittsburgh Terminal Coal Corporation, reiterate their determination to continue operations on an open-shop basis. The Association of Bituminous Coal Operators of Central Pennsylvania has formally declined an invitation of officers of district 2 of the United Mine Workers to discuss the negotiation of a new wage contract. The suggestion of union representatives in northern West Virginia that a wage parley would be in order in that district falls upon deaf ears.

The importance of the ratification of the Illinois agreement to the bituminous industry in other states was indicated by the statement of John L. Lewis, president of the United Mine Workers, to the effect that the agreement would be used as a pattern in negotiating new wage contracts in Pennsylvania, Indiana and Iowa.

The agreement recognizes the right to install mechanical loaders and conveyors of all types, the loading of coal with such machinery to be paid for on a tonnage basis, if practicable.

"With this end in view," says the joint conference report, "we agree to the appointment of a commission to consist of two operators and two miners, whose duty it shall be to study various conditions surrounding the use of such machinery in all districts of Illinois, to enable them to arrive at a tonnage basis of pay for coal loaded in this manner that is equitable and fair to both miners and operators alike, that will give justice to all districts within the state and will enable the operators to load the coal on a basis that will be fairly competitive."

It is specified that the commission shall complete this task at the earliest possible date. Until that time the following scale of wages shall apply:

Men loading coal on conveyors, \$8.04; men employed drilling, snubbing and shooting, \$8.20; cutting machine operators and helpers, \$10.07; mechanical loading machine operators, \$10.07; mechanical loading machine helpers, \$9; men employed at the face as members of loading machine crew, \$7.50.

The tentative inside and outside day wage scale to remain in effect until the commission shall have completed its work was agreed to as follows:

Mine examiners, day or night, no change; track layers, \$6.10; boy trappers, spraggers, couplers and switch throwers, now being paid from \$4 to \$4.59 per day, \$3.50; those now receiving a rate in excess of \$4.59 shall be reduced \$1.25 a day; bottom cagers, drivers, trip riders and grippers, all water haulers and machine haulers as well as timbermen, where such are employed, are to receive \$6.10 a day; pipemen for compressed air plants, \$5.95; motormen, \$7; shotfirers, per hour, \$1.03, and all other inside day labor, \$5.95.

"The scale of wages now being paid outside day labor at the various mines in this state," says the joint conference report further, "shall be reduced \$1.25 a day, except engineers, who shall be reduced \$38 a month, and sulphur picker boys, who shall be paid \$3.50 a day. It is understood that where sulphur pickers are compelled to use sledge or long handled picks in breaking chunks for impurities they shall receive \$5.61. All yardage and dead work shall be reduced 25 per cent.

"The prices for pick mined coal per ton of 2,000 lb. as they now exist in the various districts throughout the State of Illinois, shall be reduced 17c. per ton, making the basic rate at Danville 91c. per ton.

"The respective organizations pledge

themselves in good faith to endeavor to finally and promptly dispose of every dispute arising hereunder. For the purpose of providing full and adequate machinery for the adjustment of disputes that have failed of settlement by the joint executive boards, an arbitration tribunal shall be created consisting of one man who shall attend all joint board meetings, so that he will be familiar with the procedure involved. In matters that vitally affect the interests of either organization, or vitally affect the interpretation of the contract the dispute shall be submitted to arbitration only at the discretion of the joint executive boards.

"The arbitrator selected shall be a man who is familiar with the collective system of bargaining as embodied in our joint agreements.

"The selection of the arbitrator shall be left to the executive board of the Illinois miners union and the operators' association. He shall be paid jointly by the parties to this agreement, and shall devote his entire time to the work assigned to him as set forth in these articles.

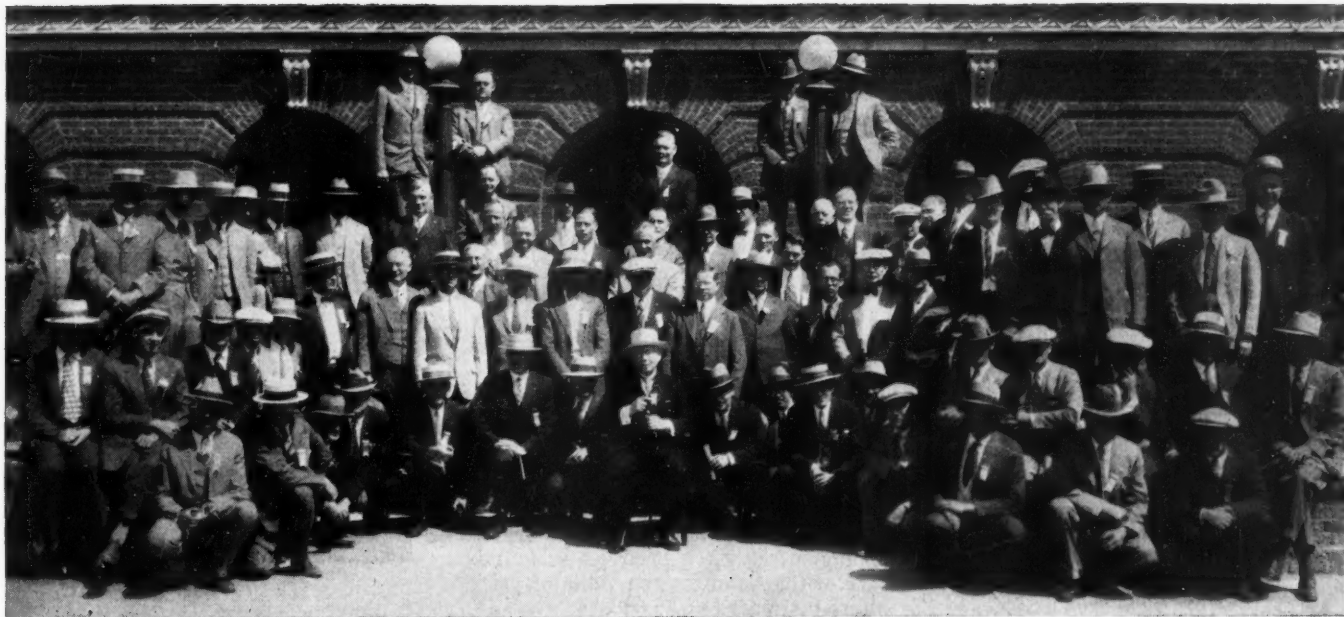
"In the handling of disputes it is understood that each case shall be decided on its merits, without regard to alleged precedents that have been established in the past. No local agreement shall be final and binding until approved by the joint executive boards."

The invitation to enter new wage parleys in the Southwest was extended to officials of districts 14, 21 and 23 by the Southwestern Interstate Coal Operators' Association on Aug. 22. The agreement, decided upon two days later, was scheduled to become effective Sept. 1 and to continue until March 31, 1931. It represents a practical return to the 1917 wage scale of \$5 a day for unskilled workers, with pick miners to receive \$1.01 to \$1.52½ a ton, according to the thickness of the coal seam. The agreement directly affects only the Kansas deep-shaft mines, as shovel mines in the state and practically all mines in Missouri, Oklahoma and Arkansas have been operating on close to the 1917 basis for some time, either non-union, co-operative, or under separate agreements.

The Ohio agreement, signed after several days' negotiations, runs from Sept. 1, 1928, to March 31, 1930. Fourteen operators representing mines in the Middle District and a few small operations in the Hocking Valley participated in the conferences. The scale was a bone of contention for several days after the meeting had named a joint scale committee consisting of five operators and nine miners. W. H. Haskins, secretary, Central Ohio Coal Operators' Association, headed the operators, and Lee Hall, president, district 6, headed the miners.

The scale provides for the payment of \$5 per day for track layers, bottom cagers, drivers, trip riders, snappers, machine haulers, timbermen, motormen and wiremen. Track layers' helpers will receive \$4.75, and trappers, \$3. All other inside help not specifically named will receive \$4.75 per day.





*Rocky Mountain Coal Mining Institute Men Gather at Rock Springs, Wyo.*

The scale also provides for 87.64c. per ton on the pick-mine basis, which reduced to machine mining means 60c. per ton for drilling, shooting and loading and 10c. for cutting. For shortwall machine cutting the rate is 8½c. and for arcwall cutting, 7c.

A temporary agreement affecting mechanical loading provides for \$7.50 per day for loading machine operators, \$7 for helpers, \$7.50 for conveyor machine operators, \$6 for hand loading on conveyor and \$6 for drillers and shooters.

The conference also agreed to appoint a committee of three operators and three miners to study and investigate conditions, production costs and contractual relations between employee and employer within the district and in both the union and non-union fields. This committee also will be charged with the duty of securing proper readjustment of alleged discriminatory freight rates on coal from the district.

S. H. Robbins, president, Ohio Coal Operators' Association, announced that that organization would ignore the new wage agreement and continue to operate non-union. He asserts that his association represents fully 90 per cent of the tonnage in Ohio and that these operators were pledged to the open-shop plan.

The Rocky Mountain Fuel Co. contract, agreed upon Aug. 17, runs from Sept. 1 to Aug. 31, 1930. It was drafted by a subcommittee of union representatives and company officials after negotiations extending over several days. It sets forth the following as the major purposes of the agreement:

"To promote and establish industrial justice;

"To substitute reason for violence, confidence for misunderstanding; integrity and good faith for dishonest practices, and a union of effort for the chaos of the present economic warfare;

"To avoid needless and wasteful strikes and lockouts through the investigation and correction of their underlying causes;

"To establish genuine collective bargaining between mine workers and operators through free and independent organizations;

"To stabilize employment, production and markets through co-operative endeavor and the aid of science;

"To assure mine workers and operators continuing mutual benefits and consumers a dependable coal supply at reasonable and uniform prices;

"To defend our partnership of endeavor against every conspiracy or vicious practice which seeks to destroy it; and in all other respects to enlist public confidence and support by safeguarding the public interest."

The contract provides for pit committees to represent the miners in disputes between employees and bosses and for a checkweighman to be elected and paid for by the miners. The check-off system for the payment of union dues, fines and assessments also is provided.

Another outstanding provision of the contract is for the establishment of a department of medicine, health and sanitation by the company.

John R. Lawson, for years a representative of the union, was recently made assistant to the president of the Rocky Mountain Fuel Co. and was an important factor in the negotiation of the new contract. The agreement specifies that the wage scale can be reduced whenever producers of 51 per cent of the coal in Boulder and Weld Counties reduce the scale below \$6.77 a day, the prevailing wage scale in the district. However, until operators, including the Rocky Mountain Company, mining 65 per cent of the tonnage in the district, are operating under union contract the company agrees to pay the differential of 23c. a day.

Seventeen other companies in the northern Colorado field were invited to take part in the wage negotiations, but declined.

The Anthracite Board of Conciliation at a meeting held Aug. 16 went on

record as favoring a study of the contract mining system, which has been such a bone of contention in district 1 and was indirectly responsible for the revolt against District President Cappellini, who recently resigned. The motion for this study was made by John Boylan, who recently assumed the presidency of the district.

The resolution adopted reads:

*Whereas*, In the award of the United States Anthracite Coal Strike Commission of 1920, *inter alia*, appears the following, to wit:

"(1) We demand that the next contract be for a period not exceeding two years and that the making of individual agreements and contracts in the mining of coal shall be prohibited.

"The commission adjudges and awards:

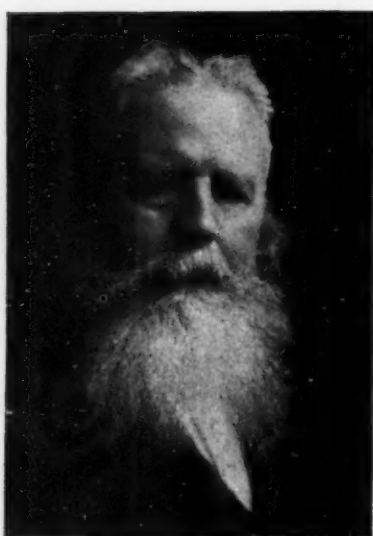
"(a) That item one of this demand, being agreed to by both operators and miners, be answered in the affirmative and made a part of the report.

"(b) That concerning item two, the commission holds that the right of contract cannot be denied and therefore returns a negative reply on the principle. The commission places on record its judgment as unfavorable to the general extension of the sub-contract system, while reorganizing the necessity of such sub-contracts under certain conditions. The commission recognizes, however, that abuses of the contract system of mining are possible and has listened with sympathy to a recital of some of these alleged abuses. In order to remove so far as possible all such abuses the commission hereby directs that upon the complaint of any employee affected, the Board of Conciliation shall review the practices in existing or proposed individual agreements and contracts as included in demand number one. The Board of Conciliation, by way of appeal, shall promptly give consideration to the complaint and render decision in the case. The Board of Conciliation, in case of appeal, shall consider and decide the question of the terms of the contract involving rates of pay and other conditions in such way as to protect and conserve the rights of all the employees in the colliery affected."

Therefore, be it resolved, by the Board of Conciliation that the operators' representatives on the Board of Conciliation be requested to collect data concerning contract system.

Be it further resolved, that any grievance filed against contract system by employee or employees affected will be heard and determined by the Board in line with the agreement.

According to unofficial reports from the region Andrew Matthey, president of district 7, has been defeated for reelection by Michael Hartneady, former sheriff of Carbon County.



James Bowron

### James Bowron Dies at 83

James Bowron, age 83, pioneer iron and steel developer of the Birmingham (Ala.) district, died in that city Aug. 25, following an attack of heart trouble. Mr. Bowron was the organizer of the Gulf States Steel Co., one of the leading Southern steel producers, and was its president from 1913 to 1921, when he retired and was made chairman of the board of directors, which position he occupied at the time of his demise. The corporation has steel and wire mills at Alabama City, and blast furnaces also at that point, and owns extensive holdings of ore and coal properties in Etowah, Blount and Jefferson counties.

Born in England, Mr. Bowron came to the United States in 1877, settling in Nashville. In 1892 he became an executive of the Tennessee Coal, Iron & Railroad Co. He was later associated in an executive capacity with the Standard Steel Co., Bessemer Coal, Iron & Land Co., and a number of other industrial concerns prior to the organization of the Gulf States Steel Co., which he built up to an enviable position of strength and virility in the iron and steel world.

### Let Natural Gas Franchise For Salt Lake City

A franchise to pipe natural gas into Salt Lake City, Utah, for 50 years has been granted by the Board of City Commissioners to the Ohio Oil Co. and associates. A 10-year contract has been entered into calling for a fixed charge of not more than 50c. per 1,000 cu.ft. It is expected that the gas will be available next spring.

The proposal was under consideration for several weeks and was strongly opposed by coal producers and distributors, coal-carrying railroads and others interested in the industry. Shortly before the granting of the franchise the coal men declared they were preparing to set up a large experimental carbonization plant.

### Over 1,000 Men to Compete In West Virginia Meet

Observance of West Virginia Safety Day at Bluefield, on Sept. 22, bids fair to eclipse all other previous safety demonstrations in the state not only in the number of mines represented but in the attendance of mine rescue crews, according to R. M. Lambie, chief of the State Department of Mines. Assurances have been given by coal companies in the northern part of the state of a full representation at the meet.

More than 1,000 miners already have registered as entrants in the first-aid contest, which will be held at the Bluefield College athletic grounds. There are 167 teams of six men and one substitute each entered. One hundred and eighty teams are expected to enter, and arrangements have been made to take care of that many. The value of prizes offered is placed at \$5,000.

All mines in the state will be idle the day of the celebration. There will be 180 judges and recorders, all from outside the state, and the attendance has been estimated at 40,000.

Some of the enthusiasm felt for the event is evidenced by the Stanley Coal Co., far up at the rim of the state, whose tippie, store and office are in Maryland and its mine in West Virginia. This company wired that it is sending 50 miners and a brass band. Another operator, in McDowell County, has ordered all his employees to attend the meet and as an inducement has offered to buy gasoline for their automobiles on the trip.

### Roberts Denies Damages Awarded in Patent Suit

That plaintiffs in the suit of Sutton, Steele & Steele and the American Coal Cleaning Corporation against the Smokeless Coal Co. and Roberts & Schaefer for alleged infringement of patent rights covering the pneumatic process for cleaning coal were awarded an injunction with damages, as stated in *Coal Age*, vol. 33, No. 8, page 512, is denied by Col. W. R. Roberts, chairman of the board of Roberts & Schaefer, who says:

"The court decision simply stated that the court found in favor of the plaintiffs. We, however, made immediate motion for an appeal, which was granted, and the case has gone to the U. S. Circuit Court. No injunction nor damages, therefore, could be or have been granted by the lower court."



W. J. O'Toole

### W. J. O'Toole in Fatal Fall

William J. O'Toole, former Minister to Paraguay during the Harding administration, general manager of the American Coal Cleaning Corporation and clerk of the County Court of McDowell County, West Virginia, died on Aug. 27, as the result of injuries sustained in a fall from a coal tippie at Gilliam.

Supervising the construction of new units of the coal cleaning corporation at Gilliam, Mr. O'Toole had climbed to the top of a high structure. He slipped and fell, succumbing to his injuries within a short time after the accident.

Mr. O'Toole was a son of Colonel Edward O'Toole, general superintendent of the United States Coal & Coke Co. at Gary, who only recently sailed for Europe. William J. O'Toole was associated with his father in the American Coal Cleaning Corporation.

### Crow's Nest Blast Kills Six

An explosion, resulting in the loss of six lives from afterdamp, occurred in the No. 1 East mine at the Crow's Nest Pass Coal Co.'s Coal Creek colliery, near Fernie, B. C., just before noon on Aug. 30. The explosion is believed to have been caused by a blow-out at the working face of No. 16 slope.

There were about 200 men in the mine at the time of the explosion, and all but the six men, whose bodies have been recovered, are believed to have reached the surface safely.

### Anthracite Prices at New York Effective Sept. 1

(Per Gross Ton, F.O.B. Mine)

	Broken	Egg	Stove	Chest-nut	Pea	Buck-wheat	Rice	Bar-ley
Hudson Coal Co.	\$8.50	\$8.75	\$9.10	\$8.75	\$5.00	\$3.25		
Lehigh Valley Coal Sales Co.	8.50	8.75	9.10	8.75	5.00	3.25	\$2.25	\$1.75
Phila. & Reading Coal and Iron Co.	8.50	8.75	9.10	8.75	5.00	3.25	2.25	1.75
Lehigh & Wilkes-Barre Coal Co.	8.25	8.75	9.10	8.75	5.00	3.25	2.25	1.70
Delaware, Lackawanna & Western Coal Co.	8.50	8.75	9.10	8.75	5.00	3.25*	2.25	1.70
Lehigh Coal & Navigation Co.	8.50	8.75	9.10	8.75	5.00	3.25	2.25	1.75
Hanna & Co.	8.50	8.75	9.10	8.75	5.00	3.00	2.25	1.75
Jeddo-Highland Coal Co.:								
Jeddo.		9.35	9.70	9.35	6.00	} Prices on application		
Highland.		9.10	9.45	9.10	6.00			
*Domestic buckwheat, \$3.75.								



## McAuliffe and Tolz Discourse on Mining And Fuel Processing

Mechanical engineering in coal mines was the subject of an address by Eugene McAuliffe, president, Union Pacific Coal Co., before a sectional meeting of the American Society of Mechanical Engineers at St. Paul, Minn., Aug. 27-30. Low-temperature distillation of low-grade fuels was the theme of a paper by Max Tolz at the sessions devoted to fuels and material handling.

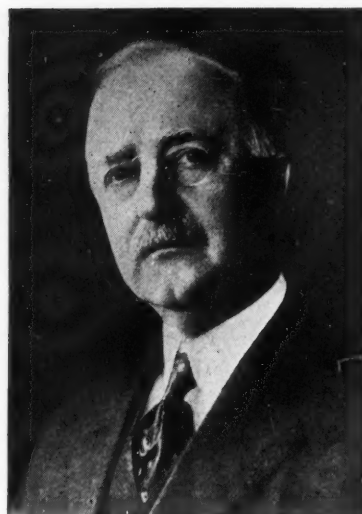
"Doubtless the earliest engineering service rendered the mining industry," said Mr. McAuliffe, "was that of establishing locations for mine openings and thereafter directing the course of the underground adits. After a passage of years came the discovery of the steam engine and for the next three-fourths of a century the mechanical engineer engaged in the design of steam pumps, locomotives and winding engines. Next came the demand for a successful cutting machine, answered by the air punching machine and followed by the electric cutting machine, 72 per cent of United States bituminous production being undercut in 1926.

"In the development of the mine equipment referred to, as well as in the boiler room, power house and tipple, the mechanical engineer has rendered signal service, but his great task yet lies before him in supplying power-driven coal-loading machines for the work of lifting coal into the pit car."

The power-driven machine was developed by W. A. Hamilton in 1907, but his original loader, though successful, could not meet the opposition of the mine labor. Little was done after that until 1922, when the movement gained new life and impetus. The number of mines using loading machines increased from 60 in 1923 to 131 in 1926, the number of machines used from 125 to 455 and the tonnage loaded from 1,879,726 to 10,022,195.

Present loading machines may load only or combine the operations of loading and transport. The mechanical engineer is obliged to consider space limitations, heavy pitches, roof support and adequate ventilation. The management, to make a success of machine loading, must make up its mind to succeed in spite of labor opposition, unforeseen obstacles and even weakness in machine design. In addition, opposition may exist in the minds of labor, and of management as well, and must be overcome.

"Further mechanization of coal mines will continue and the mechanical engineer will grow in use and importance in the mining world." Workers will become builders, operators and maintainers of machines; cost of production will be lowered, mining will be changed to provide concentration and better conditions of employment and electric service lines and equipment will be employed in volume. "With the items of interest, taxes, depreciation and obso-



G. H. Caperton

### G. H. Caperton Dead

George Henry Caperton, one of the leading coal producers of West Virginia, died suddenly from a heart attack Aug. 11, at his home in New Charleston, W. Va. He was in his 68th year.

Mr. Caperton had been a prominent figure in the smokeless field since 1880. He was president of the New River Coal Co., Slab Fork Coal Co., Scotia Coal & Coke Co. and the South Side Co. since their organization. He also was active in association work, serving at various times as president of the Smokeless Coal Operators' Association, New River Coal Operators' Association and the Kanawha Operators' Association.

lence, as well as the cost of ventilation and pumping running as constants against the cost of production, the industry will eventually, like the public utility companies, look to multiple shifting as a means toward obtaining a better load factor."

Mr. Tolz reviewed what Europe had accomplished in low-temperature distillation and the possibilities of applying this treatment to the lignites of the Northwest. He inferred that the success of the process will lie along the line of briquetting the char to facilitate competitive distribution to territory in the area of low-cost transportation. Processed lignite would be a source of smokeless fuel for domestic, industrial and even railway use. Where distances were not too great the char could be shipped and after pulverization, burned under the boilers of industrial plants.

It seemed to be the consensus of opinion that treatment would not be feasible in the East and in the Middle West because the gas released would exceed local requirements unless tremendous investments in existing gas plants were wiped out. In self-contained areas of the Northwest, where all the byproducts of distillation could be marketed, it was felt that the plan proposed by the author might be entirely practicable.

## Shipping Board to Encourage Coal Exportation

The U. S. Shipping Board has authorized the Merchant Fleet Corporation to negotiate for the export of coal in full cargo lots from the United States to Mediterranean ports. F. G. Frieser, director of traffic for the corporation, has been designated to receive applications for charters.

The announcement follows the recent Congressional appropriation of \$1,000,000 to be used by the Shipping Board in building up the export of coal in American bottoms to whatever territory showed the greatest probability of success.

### Wants Case Reargued

The Chesapeake & Ohio Ry. has asked the Interstate Commerce Commission to reopen for argument before the full commission proceedings involving the application of the petitioning carrier, the Norfolk & Western and the Virginian railways for permission to construct new mileage into the Guyandot Valley coal field. The Commission recently granted certificates of convenience and necessity for such construction to subsidiaries of the two lines last named (*Coal Age*, Vol. 33, p. 510) but denied the application of the C. & O.

## Fierce Blast at Castlegate; None Injured

A terrific explosion occurred Aug. 8 at Castlegate No. 2, the mine of the Utah Fuel Co., in Carbon County, Utah, that suffered from a severe explosion a few years ago. Nobody was in the mine at the time. Shots were being fired by a current established by closing switches near the mouth of the mine. Though no one was killed, it is said that the present explosion was as severe as the previous one. It threw dust clear across the canyon. It did not damage the outside as much as before because the portal of the escapeway had been so greatly enlarged by the earlier explosion. The dip side of the mine is sealed because, it is said, there are fires in that direction. The rise area has been explored. No fires were found.

## Industrial Coal Stocks Drop; Consumption Gains

Bituminous coal stocks in the United States have reached about normal, reserves of both hard and soft coal in the hands of industrial consumers on Aug. 1 totaling slightly less than 40,000,000 tons, according to the monthly report of the National Association of Purchasing Agents.

Coal consumption during July increased approximately 750,000 tons to 33,500,000 tons as compared with June, stocks in the United States and Canada showing a decline of about 1,333,000

tons. Consumption in July was almost identical with that of the corresponding month a year ago. Consumers' stocks on Aug. 1 were sufficient for 36 days based on the current rate of consumption.

#### DAYS' SUPPLY OF SOFT COAL ON HAND IN VARIOUS INDUSTRIES

Byproduct coke .....	21
Electric utilities and coal-gas plants.....	51
Railroads .....	36
Steel mills .....	35
Other industries .....	38
Average total stocks throughout the country .....	36

#### ESTIMATES OF OUTPUT, CONSUMPTION AND STOCKS (In Tons)

	U. S. Production	Industrial Consumption	On Hand in Industries
Aug. ....	48,907,000	33,900,000	59,697,000
Sept. ....	48,592,000	33,195,000	59,179,000
Oct. ....	51,400,000	35,813,000	60,154,000
Nov. ....	47,100,000	35,514,000	57,940,000
Dec. ....	47,309,000	37,225,000	55,725,000
Jan. ....	49,645,000	37,678,000	52,909,000
Feb. ....	46,933,000	36,301,000	50,595,000
March ....	49,452,000	38,588,000	48,388,000
April ....	39,081,000	35,230,000	47,432,000
May ....	44,748,000	34,844,000	43,670,000
June ....	41,264,000	32,784,000	40,890,000
July ....	41,785,000	32,527,000	40,700,000
Aug. 1 .....			39,415,000

Bituminous coal stocks held by railroads of the country on July 15 showed a decrease of 300,972 tons from the reserves held on July 1, according to reports made to the American Railway Association. Total stocks held by the carriers on July 15 were 11,464,477 tons.

#### Revive "Coal Merchant"

The National Retail Coal Merchants' Association has revived its official publication "The Coal Merchant," with the issue of August, 1928. It is an eight-page 8½x11½ publication, in three columns, in miniature newspaper style, covering the activities of the organization. The publication contains no advertising, pursuant to the policy of the association not to compete in this field with the established trade press.

#### Coming Meetings

Smokeless Coal Operators' Association of West Virginia. Annual rodeo, Sept. 12-14, at Greenbrier Hotel, White Sulphur Springs, W. Va.

New York State Coal Merchants' Association. Annual convention, Sept. 13-15, at Saranac Inn, Upper Saranac, N. Y.

Second National Fuels Meeting, under the auspices of the Fuels Division of the American Society of Mechanical Engineers, Sept. 17-20, at Cleveland, Ohio.

National Safety Council. Annual meeting, Oct. 1-5, Waldorf-Astoria Hotel, New York City.

American Management Association. Autumn convention, Nov. 13-15, Palmer House, Chicago, Ill.

National Coal Association. Eleventh annual meeting, Nov. 14-16, Cleveland Hotel, Cleveland, Ohio.

Second International Conference on Bituminous Coal, Carnegie Institute of Technology, Pittsburgh, Pa., during week of Nov. 19.

Seventh National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City, Dec. 3-8.

Coal Mining Institute of America. Annual meeting Dec. 12, 13 and 14, at Pittsburgh, Pa.



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Sir Alfred Mond

One of the leading industrialists of Great Britain, Sir Alfred Mond, now Lord Mellett, will take a prominent part in the Second International Conference on Bituminous Coal, at Carnegie Institute of Technology, Pittsburgh, Pa., Nov. 19-24. Through his large holdings in the heavy chemical industry he is taking an active part in coal processing in Great Britain.

#### Injunction Balks Union In Hocking Valley

A temporary restraining order, enjoining members of the United Mine Workers from participating in any intimidating or threatening demonstrations at or near the mines of the Ohio Collieries Co. and the Sunday Creek Coal Co. in Athens County, Ohio, was granted Aug. 25 by Judge L. J. Worstell of the common pleas court of that county. It is the first sweeping injunction that has been granted in the state courts during the present strike in Ohio and marks another step to make the operation of mines in the Hocking Valley under non-union conditions more permanent.

#### Defeat Compensation Move

A movement by Colorado labor unions for an amendment to the state workmen's compensation act which would increase payments approximately 35 per cent was defeated last month when employing interests convinced the secretary of state that the petitions presented by the labor interests did not contain a sufficient number of valid signatures. The law requires that 25,000 signatures are necessary to place a proposal for amendment on the ballot. The petitions carried 28,000 names but, at the hearing on the protests of the employers, representatives of the coal operators introduced evidence to show that there were approximately 10,000 fraudulent names signed.

#### Willis Branch Resumes

The Willis Branch mine of the Willis Branch Coal Co., Willis Branch, W. Va., resumed operations Aug. 27, after having been shut down for more than a year. About twenty men had been employed in cleaning up the mine. When the mine was closed down it was producing approximately 500 tons a day. About 75 coal loaders and 40 day men are being employed at the mine.

#### Personal Notes

JOHN F. DANIEL was appointed chief mine inspector of Kentucky by Governor Flem D. Sampson on Aug. 13. The appointment is for a four-year term, effective as of July 1. Mr. Daniel has had many years' experience in mining in both eastern and western Kentucky. He succeeds William H. Jones. The new inspector has named these district inspectors: Rob B. Easton, of Henderson, first district; William Burgess, Paintsville, seventh district, and John F. Porter, Pikeville, eighth district.

GEORGES CUVILLIER, agent of the Société Française des Charbonnages du Tonkin, Hong Kong, with mines in French Indo China, is touring the United States studying coal production and marketing methods with a view to obtaining an outlet for coal here. He also is desirous of learning of the suitability of American machinery for the production of coal in his company's mines.

WILLIAM ALEXANDER MCKENZIE has been appointed Minister of Mines and Minister of Labor in the new Conservative Government of British Columbia. He was sworn in Aug. 21 by Chief Justice MacDonald, who is acting Lieutenant Governor in the absence of Lieutenant Governor R. R. Bruce in Great Britain.

JOHN SCHUSTER, for several years inside foreman at the Mahanoy City colliery of the Philadelphia & Reading Coal & Iron Co., has been made superintendent of Maple Hill Colliery. George Oliver, superintendent at North Mahanoy, takes Schuster's old post, being succeeded at North Mahanoy by George G. Mayer.

D. J. PARKER, district engineer, U. S. Bureau of Mines, formerly located at Berkeley, Calif., making examinations of mines and in charge of rescue and recovery work in certain states with the study of the dangers of inhalation of dust as a specialty, has been appointed supervising engineer at the Salt Lake City station.

W. GASTON CAPERTON, of Slab Fork, W. Va., has been elected president of the New River Coal Co., Slab Fork Coal Co., Scotia Coal & Coke Co. and the South Side Co., succeeding G. H. Caperton, deceased. William G. Caperton, of Charleston, W. Va., who for some time has been vice-president of the New River company and in charge of sales, becomes vice-president of the other three companies.



## Northwestern Rescue Team Stars In International Meet

**F**ORTY-SEVEN first-aid teams and twelve mine-rescue crews from mining districts in eleven different states took part in the seventh annual International First-Aid and Mine-Rescue Contest, held at Butte, Mont., Aug. 20-23, under the auspices of the U. S. Bureau of Mines. The eleventh annual Butte Miners' Safety-First Day was held in conjunction with the contest, and the combined program provided much interest and amusement for the large number present.

More than 4,000 persons witnessed the contests, which were held on the athletic field of Columbia Gardens. With a background of towering mountains and many of the competing teams clad in white duck uniforms, the arena was an impressive sight as the contestants went through their work.

After three days of close competition the team of the Northwestern Improvement Co., Roslyn, Wash., captured the mine rescue contest and highest honors for combination first-aid and mine rescue teams. First place in the first-aid contest went to one of the three teams of the Anaconda Copper Mining Co., that representing the Great Falls (Mont.) electrolytic zinc plant.

Second place in both the mine rescue contest and the competition for combination teams was won by the team representing the Madison Coal Corporation, Cartersville, Ill., the Consolidation Coal Co. team from Acosta, Pa., winning third place in the same two contests. By a very small margin the team of the Standard Oil Co., Baton Rouge, La., won second place in the first-aid contest over the Great Falls furnace refinery team of the Anaconda Copper Mining Co., which placed third.

Announcement of the various winning teams and the awarding of prizes took place at a banquet held in the Masonic Temple at Butte the evening of the last day of the contest. W. W. Gale, attorney, Billings, Mont., presided as toastmaster and introduced the speakers, who were Dr. F. H. Thomson, president, Montana School of Mines; Edwin Young, safety engineer, Great Falls reduction department, Anaconda Copper Mining Co.; Dr. R. R. Sayers, chief, health and safety branch, U. S. Bureau of Mines, and W. B. Daly, general manager of mines of the Anaconda company.

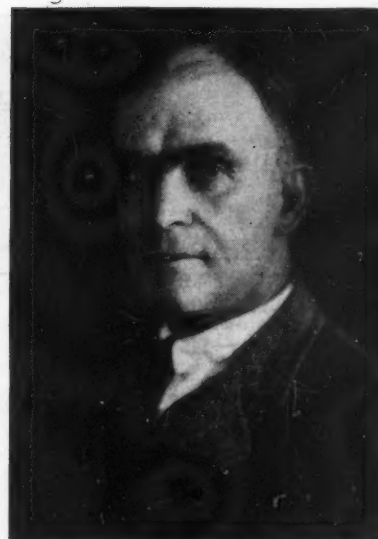
Prizes won by the Northwestern Improvement Co. team, in obtaining first place in the mine-rescue contest and highest honors among combination teams, included the bronze medallion awarded by Act of Congress, silver cup presented by *Coal Age*, silver cup presented by the *Rocky Mountain News* and *Denver Times*, of Denver, Colo., silver cup presented by *Modern Mining*, silver cup presented by the Concordia Electric Co., gold medals presented by the National Safety Council, Joseph A.

Holmes challenge trophy, silver cup presented by the National Safety Council, silver cup presented by the Mine Safety Appliances Co. and six replicas of the last-named cup, which were presented by the donor to individual members of the team.

Silver and bronze medals were presented by the National Safety Council to each member of the second and third teams respectively in the mine-rescue contest. Banners were awarded to first, second and third place teams, and a banner also was awarded to the team having the highest score from each state represented in the contest. Prizes for combination first-aid and mine-rescue teams included banners to first, second and third place teams; automobile first-aid cabinets, presented by the Mine Safety Appliances Co. to the members of the teams winning second and third.

Prizes won by the team of the Anaconda Copper Mining Co. that placed first in the first-aid contest included a bronze medallion awarded by Act of Congress, silver cup presented by *Coal Age*, silver cup presented by the Illinois Coal Operators' Association, Central Illinois Coal Operators' Association, Fifth and Ninth Districts Coal Operators' Association of Illinois, and United Mine Workers of America, District 12; silver cup presented by the National Coal Association, gold medals of the National Safety Council presented to each member of the team, and bronze medals of the American Red Cross awarded to each member of the team.

Silver and bronze medals of the National Safety Council were awarded to



(C) Blank & Stoller

F. R. Wadleigh

Having accepted the post of consulting fuels engineer with the Consolidated Gas Co. of New York, Mr. Wadleigh has relinquished his old office at 1 Broadway to take up new quarters at 4 Irving Place, New York City. As editor, U. S. Fuel Administrator, chief of the Coal Division, U. S. Bureau of Mines, and engineer, Mr. Wadleigh is widely known in the coal industry.

each member of the second and third teams respectively in the first-aid contest. Banners were presented to first, second and third place teams, and a banner also was awarded to the team having the highest score from each state represented in the contest.

In addition to the above prizes, the Rocky Mountain Coal Mining Institute



Northwestern Improvement Co. Team, Winners of Mine-Rescue Contest and First Honors for Combination Teams

Sitting, left to right—C. R. Holmes; R. T. McKean (captain, mine rescue); W. P. Saul (captain, first-aid), and H. Newman. Standing, left to right—C. C. Webber, R. Bell, and J. G. Schoning (instructor).



*Great Falls Reduction Works Team, Anaconda Copper Mining Co.,  
Winners of First-Aid Contest*

Sitting, left to right—Michael Tetrault and Edward Schrader. Standing, left to right—Raymond Lipton; Fred I. Erickson (captain); Nels Nelson; W. J. Needham, instructor; A. McDonald, president, First-Aid Society, Great Falls Reduction Works; Matt Parock; A. E. Wiggin, general superintendent, Great Falls Reduction Works; and Gordon Gills, substitute member of the team.

awarded a silver cup and wrist watches to each member of the first-aid team representing a coal mining company, a coal miners' organization, or a group of individual coal miners, making the highest score, from the Rocky Mountain States of Colorado, Idaho, Montana, New Mexico, Utah and Wyoming. These prizes were won by the team of the Colorado Fuel & Iron Co., Walsen, Colo.

Mine operators of Butte awarded a silver cup to the first-aid team from outside Montana making the highest score. This trophy was won by the team of the Standard Oil Co. of Louisiana, Baton Rouge, La.

Officials of the contest were: Chief judges of first-aid contest, Dr. Harold

Schwartz, president, Silver Bow County Medical Association; J. T. Ryan, vice-president and general manager, Mine Safety Appliances Co., Pittsburgh, Pa.; chief judge of mine rescue contest, W. G. Duncan, associate professor of mining extension, Pennsylvania State College, State College, Pa.; chief recorder, Dr. August Knoefel, Terre Haute, Ind.; chief timekeeper, J. Burke Clements, chairman, Montana State Industrial Commission.

In the afternoon of Aug. 21 a special train conveyed about 1,000 of the visitors attending the meet to Anaconda, where they were conducted by guides through the smelting plant of the Anaconda Copper Co. A small copper ingot was presented to each visitor.

## **J. A. Jeffrey Succumbs To Infirmities of Age**

Joseph A. Jeffrey, founder and chairman of the board of directors of the Jeffrey Manufacturing Co., Columbus, Ohio, which specializes in the manufacture of mining equipment, died Aug. 27 at his home in Columbus, aged 92 years. He was one of the leaders in manufacturing and philanthropic circles in Columbus for many years. Death was due to old age.

Mr. Jeffrey was born in Clarksville, Clinton County, Ohio, in 1836 and went in 1858 to Columbus, where he entered the banking business, rising rapidly to the position of cashier. He resigned to enter the wholesale carpet and furnishing business in Cincinnati, but returned in three years to aid in the organization of the Commercial Bank.

Later he, with a number of his bank-

ing associates, purchased a controlling interest in the Lechner Machine Co., and this was reorganized into the Jeffrey Manufacturing Co. The company's business was expanded to turn out coal-mining machinery, the company producing the first successful undercutting machine. The plant now employs 3,300 men, covers 33 acres of ground and in addition to mining machinery manufactures elevating, conveying and crushing machinery and electric haulage locomotives.

Mr. Jeffrey retired from the active presidency in 1900, being succeeded by his son, Robert H. Jeffrey. He had been chairman of the board of directors since that time. He leaves three sons and two daughters. In addition to Robert H. Jeffrey, the eldest son, there are Joseph W. Jeffrey, vice-president, and Malcolm D. Jeffrey, assistant sales manager.

## **Reserves of Soft Coal Fall in Second Quarter To 41,700,000 Tons**

Consumers' stocks of bituminous coal on July 1 amounted to 41,700,000 tons, according to the latest report of the Coal Division, U. S. Bureau of Mines. In comparison with the quantity on hand at the beginning of the previous quarter this is a decrease of 6,600,000 tons. The abnormal reserves built up in anticipation of the suspension of mining on April 1, 1927, have now been largely absorbed and the present stocks are not far from those at the corresponding period in 1925 and 1926.

As usual at this period of the year, there was a sharp decline in the rate of consumption following the end of the heating season. The average consumption for the second quarter, excluding exports, was 8,312,000 tons per week, as against 10,636,000 tons in the first quarter. A decrease also is shown in comparison with the second quarter of 1927, when consumption averaged 8,889,000 tons a week.

Exports in the period under review were at the rate of 270,000 tons a week, and the total of consumption plus exports was 8,582,000 tons.

From April 1 to June 30 the average rate of consumption of bituminous coal, including coal drawn from stockpiles or from the reserve in transit, was 8,312,000 tons a week. The exports averaged 270,000 tons a week, and the total of consumption plus exports was 8,582,000 tons.

The home consumption in the second quarter—8,312,000 tons a week—shows the usual decline in comparison with the first quarter, reflecting the end of the heating season. Milder weather tends to cause a decrease in the consumption of the railroads, the public utilities and the general industrial plants, as well as a very sharp drop in the deliveries of retail dealers.

At the rate of consumption prevailing in May and June, the stocks on July 1 were sufficient to last 38 days, if evenly divided. On the same date in 1927 they were sufficient for 54 days.

From the first of April to the middle of June stocks of railroad fuel declined steadily. During this period there was a net decrease of 2,784,000 tons. During the latter part of June, however, 63,000 tons was added to the railroad reserves, and the total on hand on July 1, as reported by the American Railway Association, was 11,765,000 tons.

According to the American Railway Association, on July 1 there were 1,195,000 tons (23,903 cars) of bituminous coal in cars unbilled at mines or in classification yards. In comparison with July 1, 1927, this is an increase of 114,000 tons.

On July 1 there was 6,204,389 tons of soft coal on the upper lake docks, of which 4,583,960 tons was on Lake Superior and 1,620,429 tons on Lake Michigan. On the same date last year the total stocks were 6,840,554 tons.



## Fewer Deaths From Coal Mine Accidents Shown by July Reports

Accidents at all coal mines in the United States during the month of July, 1928, resulted in the death of 123 men, according to reports of state mine inspectors to the U. S. Bureau of Mines. Of this number 99 fatalities occurred at bituminous mines, the remaining 24 resulting from accidents in the anthracite mines of Pennsylvania. The total production of coal during the month was 40,671,000 tons, of which 36,230,000 tons was bituminous, and 4,441,000 tons was anthracite.

Based on these figures the death rate for the industry as a whole, per million tons of coal produced, was 3.02; that for bituminous was 2.73 and for anthracite it was 5.40. The death rates for July a year ago were 3.24 for bituminous mines, based on 109 deaths and 33,637,000 tons; 5.97 for anthracite, based on 30 fatalities and 5,028,000 tons, and 3.59 for all coal mined, based on 139 fatalities and 38,665,000 tons of coal mined.

Reports for the first seven months of 1928 show 1,258 fatalities caused by accidents at all coal mines. The production of coal for this period was 312,063,000 tons, showing a death rate of 4.03 per million tons as against 3.83 for the same seven months of 1927, based on 1,364 deaths and 356,191,000 tons of coal. The record for bituminous coal alone from January to July, 1928, was 1,004 deaths and 270,519,000 tons, with a fatality rate of 3.71, while that

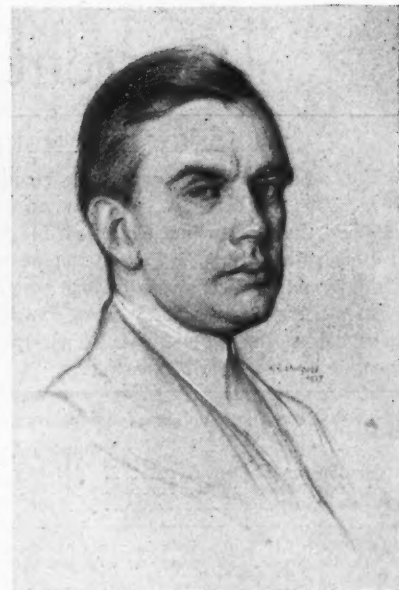
for anthracite showed 254 deaths, 41,544,000 tons and a death rate of 6.11. During the same period of 1927 1,056 deaths occurred in bituminous mines, with a production of 310,266,000 tons and a fatality rate of 3.40. The record for anthracite during the first seven months last year was 308 deaths, 45,925,000 tons and a death rate of 6.71. The industry as a whole showed 1,364 deaths, 356,191,000 tons and a death rate of 3.83.

Compared with June, 1928, the rate for July of the present year was slightly lower for both bituminous and anthracite mines.

There were no major disasters during July—that is, no disaster causing the death of five or more men—but there is a record of nine such disasters for previous months of the current year, with a resulting loss of 290 lives. In the corresponding period last year there were seven major disasters which caused the death of 140 men.

Comparison of the principal causes of fatal accidents in 1928 to the end of July with those for the same period last year, follows:

	Year 1927	Jan.-July, 1927	Jan.-July 1928
All causes.....	3,704	3,829	4,031
Falls of roof and coal.	1,907	1,845	1,807
Haulage.....	586	615	548
Gas or dust explosions			
Local explosions....	153	168	109
Major explosions....	258	357	929
Explosives.....	183	196	154
Electricity.....	167	180	154
Other causes.....	450	468	330



O. Kuhler

Born in 1894 back among the hills bordering the Rhine, a district teeming with industrial activity, this artist spent his early life in an ideal setting for the absorption of the realistic atmosphere that characterizes his etchings and paintings. The frontispiece in this issue of "Coal Age" is a striking example of his work in this field. He received an education in the technical schools, but although he found engineering interesting he evinced greater enthusiasm for drawing and painting. He came to America in 1923, establishing a studio in New York City early this year.

### Coal-Mine Fatalities During July, 1928, by Causes and States

(Compiled by Bureau of Mines and published by Coal Age)

State	Underground											Shaft				Surface							Total by State			
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of Gas or Coal Dust	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining Machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1928	1927
Alabama.....	1						1					2													2	11
Alaska.....																									0	0
Arkansas.....			1				2					3													3	1
Colorado.....																									0	1
Georgia and North Carolina.....																									0	1
Illinois.....		2	1		1						1	6	1				1						1	1	10	0
Indiana.....	2				1							3													3	1
Iowa.....																									0	0
Kansas.....					1							1													1	0
Kentucky.....	9		2									11													11	17
Maryland.....																									0	0
Michigan.....																									0	0
Missouri.....																									0	0
Montana.....																									0	0
New Mexico.....																									0	0
North Dakota.....																									0	0
Ohio.....	4		3		2				1		1	11													11	6
Oklahoma.....																									0	0
Pennsylvania (bituminous).....	15	1	1	1			1				1	20										1	1		21	20
South Dakota.....																									0	0
Tennessee.....																									0	0
Texas.....																									0	0
Utah.....	2											2													2	1
Virginia.....	1											1														0
Washington.....							4																		0	1
West Virginia.....	17	4	6	1			4					32							1				1		33	35
Wyoming.....	1											1													1	
Total (bituminous).....	53	7	14	1	6		8		1		3	93	1				1	1	1			2	1	5	99	30
Pennsylvania (anthracite).....	8	4	2	6	2							22	1					1							24	109
Total, July, 1928.....	61	11	16	7	8		8		1		3	115	2	1	2		2	1	1	1		2	1	5	123	139
Total, July, 1927.....	63	7	28	4	8		16		2		2	130														

# Current Prices of Mining Supplies

## SINCE LAST MONTH

**B**Y far the most important price change of the month was a reaction in cast-iron pipe quotations at Burlington mills, following the rise which occurred in August at Birmingham. C-I pipe prices dropped \$1 per ton at mill, similarly affecting f.o.b. quotations in the Northeastern states. Heavy melting steel scrap is up 25c. per ton at Chicago, compared with August levels. Feeder cable, No. 14 solid, rose \$1 per 1,000 ft. in the larger buying centers east of the Mississippi.

**STEEL RAILS**—The following quotations are per gross ton, f.o.b., in large mill lots:

	Pittsburgh	Birmingham	Chicago
Standard Bessemer rails.....	\$43.00	\$43.00	\$43.00
Standard open-hearth rails.....	43.00	43.00	43.00
Light rails, 25 to 45 lb.....	36.00	34@36	36@38

**TRACK SUPPLIES**—The following prices are base per 100 lb. f.o.b. Pittsburgh mill for large mill lots, together with warehouse prices at Chicago and Birmingham:

	Pittsburgh	Chicago	Birmingham
Standard spikes, 1/2-in. and larger.....	\$2.80	\$3.55	\$3.00
Track bolts.....	3.80	4.55	3.90
Standard section angle bars, splice bars or fishplates.....	2.75	3.40	3.00

**WROUGHT STEEL PIPE**—On deliveries from warehouses at the places named the following discounts hold for welded steel pipe:

	New York	Black Chicago	St. Louis
1 to 3 in. butt welded.....	50%	54%	49%
2 1/2 to 6 in. lap welded.....	45%	51%	46%

	New York	Galvanized Chicago	St. Louis
1 to 3 in. butt welded.....	36%	41%	36%
2 1/2 to 6 in. lap welded.....	32%	38%	33%

## WROUGHT-STEEL PIPE LIST

Size, Inches	List Price per Foot	Diameter in Inches External	Diameter in Inches Internal	Thickness Inches
1	\$0.17	1.315	1.049	.133
1 1/2	.23	1.66	1.38	.14
2	.27	1.9	1.61	.145
2 1/2	.37	2.375	2.067	.154
3	.58	2.875	2.469	.203
3 1/2	.76 1/2	3.5	3.068	.216
4	.92	4.0	3.548	.226
4 1/2	1.09	4.5	4.026	.237
5	1.27	5.0	4.506	.247
5 1/2	1.48	5.563	5.047	.258
6	1.92	6.625	6.065	.28

**CAST-IRON PIPE**—Prices, f.o.b., per net ton, for Class B in large mill lots:

	Birmingham	Burlington, N. J.	New York
4 in.....	\$37.00	\$39.00	\$41.60
6 in. and over.....	34.00	36.00	38.60

	Pittsburgh	Chicago	St. Louis	San Francisco
4 in.....	\$45.50	\$45.20	\$42.60	\$47.00
6 in. and over.....	42.50	42.20	39.60	44.00

Gas pipe and Class "A," \$3.00 per ton extra.

**BOLTS AND NUTS**—Discounts from list, Apr. 1, 1927, on immediate deliveries from warehouse in New York and vicinity: Machine bolts, square heads and nuts, up to 1x30-in., full packages, 50%; Carriage bolts up to 1/2 x 6-in., full packages, 55%; Nuts, hot-pressed or cold-punched, blank or tapped, square or hexagonal, full packages, 55%.

**STEEL PLATES**—Following are base prices per 100 lb. in large mill lots f.o.b., for 1/2-in. thick and heavier:

Pittsburgh.....	\$1.85	Birmingham.....	\$2.05
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**STRUCTURAL RIVETS**—The following quotations are per 100 lb., in mill lots, f.o.b. mill, for 1/2-in.:

Pittsburgh...\$2.80@2.90	Cleveland...\$2.80@2.90	Chicago....\$3.00
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**WIRE ROPE**—Discounts from list price on regular grades of bright and galvanized, in New York and territory east of Missouri River:

	Per Cent
Plow steel round strand rope.....	35
Special steel round strand rope.....	30
Cast steel round strand rope.....	20
Round strand iron and iron tiller.....	5
Galvanized steel rigging and guy rope.....	7 1/2
Galvanized iron rigging and guy rope (add to list).....	12 1/2

**RAIL BONDS**—Stranded copper, 28-in., 4/0, B. & S. gage, are welded, at points east of the Mississippi, price per 100 net.....\$93.18

**DRILL ROD**—Discounts from list at warehouse:

New York.....60%	Cleveland.....55%	Chicago.....50%
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**FRICITION TAPE**—Size 1/2-in. in 100 lb. lots in Eastern territory, per lb., \$0.29

**RAILWAY TIES**—For fair-sized orders, f.o.b., the following prices per tie hold:

	6 in. x 8 in. by 8 Ft.	7 in. x 9 in. by 8 1/2 Ft.
Chicago, white oak, heart, untreated.....	\$1.40	\$1.78
Chicago, oak, empty cell creosoted.....	1.80	2.40
Chicago, oak, zinc treated.....	1.60	2.10
Chicago, Southern pine, creosoted.....	1.60	2.10
St. Louis, white oak, untreated.....	1.20	1.80
St. Louis, red oak, creosoted.....	1.50	2.30
St. Louis, sap pine or cypress, untreated.....	1.00	1.60
Birmingham, Southern pine, untreated.....	1.10	1.25
Birmingham, Southern pine, creosoted.....	1.60	1.75

**STEEL MINE TIES**—Prices range from \$0.38 to \$0.60 per tie, f.o.b. Pennsylvania and West Virginia districts, depending on quantity, gage of track and weight of rail.

**CALCIUM CARBIDE**—In drums, round lots in New York market, per lb., \$0.05@0.06.

**BRATTICE CLOTH**—Prices f.o.b. cars New York, Philadelphia, St. Louis or Chicago, per sq. yd.:

Jute, 24-oz., double warp.....	\$0.20	Jute, waterproof.....	\$0.23
Jute, 22-oz., single warp.....	.18	Duck, waterproof.....	.34
Jute, 18-oz., single warp.....	.16	Duck, non-inflammable.....	.33

**COTTON WASTE**—The following prices are in cents per lb. for bale lots:

	New York	Cleveland	Chicago
White.....	10.00@13.50	16.00	15.00
Colored.....	9.00@13.00	12.00	12.00

**MACHINE OIL**—Medium bodied, in 55 gal. metal barrels, per gal., as follows:

New York.....\$0.30	Cleveland.....\$0.36	Chicago.....\$0.36
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**SCRAP IRON AND STEEL**—The prices following are f.o.b. per ton paid by dealers:

	New York Per Gross Ton	Chicago Per Gross Ton	Detroit Per Gross Ton
No. 1 railroad wrought.....	\$10.00@10.50	\$12.75@13.25	.....
Stove plate.....	8.75@ 9.00	13.00@ 13.50	.....
No. 1 machinery cast.....	12.50@ 14.00	15.00@ 15.50	\$14.00
Machine shop turnings.....	6.25@ 6.50	7.25@ 7.75	7.00
Cast borings.....	6.00@ 6.50	9.50@ 10.00	8.25
Railroad malleable.....	10.00	13.00@ 13.50	.....
Re-rolling rails.....	10.50@ 11.00	15.50@ 16.00	13.00
Re-laying rails, 56@60 lb.....	23.00@ 24.00	23.00@ 25.00	.....
Heavy melting steel.....	10.35@ 10.75	12.75@ 13.25	12.00

**SCRAP COPPER AND BRASS**—Dealers' purchasing prices in cents per lb.:

	New York	Cleveland	Chicago
Crucible copper.....	\$12.75 @ \$13.00	\$12.00	\$11.75@ \$12.25
Copper, heavy, and wire.....	12.00 @ 12.75	11.25	11.25@ 11.75
Copper, light, and bottoms.....	10.62 1/2 @ 11.12 1/2	9.75	10.00@ 10.50
Brass, heavy, yellow.....	7.25 @ 7.50	7.75	7.25@ 7.75
Brass, heavy, red.....	9.75 @ 10.25	10.00	9.50@ 9.75
Brass, light.....	5.50 @ 6.00	6.25	6.25@ 6.75
No. 1 yellow rod turnings.....	7.75 @ 8.25	7.75	7.50@ 8.00

**COPPER WIRE**—Prices of bare wire, base, at warehouse, in cents per lb. are as follows:

New York.....20.12 1/2	Cleveland.....19.62 1/2	Chicago (mill) 16.75
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**TROLLEY WIRE**—In carload lots, f.o.b., producing point, all sizes, per lb.:

Round.....\$0.1662 1/2	Grooved.....\$0.1687 1/2	Fig. 8.....\$0.1737 1/2
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**TROLLEY WHEELS**—Price f.o.b. Jersey City, N. J., each:

4-in.....\$1.00	5-in.....\$1.40	6-in.....\$1.70
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**MINING MACHINE CABLE**—F.o.b. producing point, net, per M. ft.:

No. 2 Duplex Flat, Braided	Two Conductor, Round Rubber Sheathed
Size 2-133.....\$182.00	Size 2-133.....\$669.00
Size 3-133.....162.00	Size 3-133.....579.00
Size 4-133.....143.00	Size 4- 49.....470.00

**LOCOMOTIVE CABLE**—F.o.b. producing point, single conductor, braided, net on reels containing 1,500 ft., per M. ft.:

Size 3.....\$89.60	Size 4.....\$66.30
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**FEEDER CABLE**—Price per M. ft. in larger buying centers east of the Mississippi River:

B. & S. Size	Two Conductor	Three Conductor
No. 14 solid.....	\$31.00 (net)	\$45.00 (net)
No. 12 solid.....	136.00	180.00
No. 10 solid.....	185.00	235.00
No. 8 stranded.....	305.00	375.00
No. 6 stranded.....	440.00	530.00

From the above lists discounts are: Less than coil lots, 50%; Coils to 1,000 ft., 60% 1,000 to 5,000 ft., 65%; 5,000 ft. and over, 67%.

**EXPLOSIVES**—F.o.b. in carload lots:

Black Powder	West Virginia	Districts Pennsylvania	Missouri
FF, NaNO <sub>3</sub> base, 800 kegs per car, per 25 lb. keg.....	\$1.70@1.80	\$1.70	\$1.75
Ammonium permissible			
1 1/2 x 8 in. sticks, 20,000 lb. per car, per 100 lb.....	14.00@15.00	13.75	14.00



# Among the Manufacturers



THE CHICAGO PNEUMATIC TOOL CO. recently completed a large new modern foundry at Franklin, Pa., where all gray iron castings for compressors and engines will be made. The buildings and equipment represent an investment of over \$400,000.

THE PREST-O-LITE CO., INC., has lately added two new plants to its nation-wide chain, making the total 33. These will serve nearby industry with dissolved acetylene, used in oxyacetylene welding and cutting. A plant in charge of H. A. Smith has been opened at 631 South 17th St., Harrisburgh, Pa., and another at 17th and W. Lawrence Sts., Allentown, Pa., with J. W. Summers as superintendent, has begun operations.

THE AMES SHOVEL & TOOL CO. held a "barn dance" for 200 guests Aug. 10 to celebrate the opening of new administrative offices at its factory in North Easton, Mass. The new executives of the company availed themselves of the opportunity to become acquainted with employees of the factory. The new officers are: William A. Ready, president; Norbert T. Jacobs, general sales manager; Albert H. Daggett, treasurer; Victor D. Vickery, secretary.

L. B. FOSTER CO., has opened a St. Louis office, located at 1725 Railway Exchange Building.

THE IDEAL COMMUTATOR DRESSER CO., Sycamore, Ill., has appointed as its representative in the Rocky Mountain district the Industrial Supply Co., 121-125 Motor Ave., Salt Lake City, Utah.

STOCK IN THE CHAIN BELT CO., Milwaukee, Wis., has been made available to the public after new financing with listing on the Chicago Stock Exchange. A syndicate purchased a block of 48,119 shares no par value common stock, approximately 7,000 shares representing new financing. Proceeds of the sale of additional shares, plus other funds, will be used to retire all the preferred stock of the company. The common stock is being offered at \$41 a share and was placed on a \$2.50 dividend basis with an initial quarterly dividend of 62½c. a share, payable on Nov. 15.

J. H. BODE has resigned as president of the Wellman-Seaver-Morgan Co., Cleveland, Ohio. George W. Burrell has been named to succeed him.

GRANT THORN recently resigned as sales manager of the American Cyanamid Co. to become associated with the subsidiaries of International Combustion Engineering Corporation, New York, which are identified with the coal-tar products and allied chemical fields.

THE OSTER MFG. CO., Cleveland, Ohio, announces the election of A. S. Gould to the office of secretary of the company. R. B. Tewksbury has been re-elected president, and Roger Tewksbury, formerly secretary, has been made vice-president and treasurer.

## Trade Literature

Oxwelded Industrial Piping. The Linde Air Products Co., New York City. Pp. 10; illustrated. Describes economies in construction, repair and maintenance of oxwelded pipe systems.

Elesco Superheater for Power Plants. Superheater Co., New York City. Bulletin T-1. Pp. 51; illustrated. The effect of superheated steam is described, also the application, advantages and detail designs of the Elesco superheater.

Steam Tables—Properties of Saturated and Superheated Steam, from 0.0886 to 3,300 lb. absolute pressure. The Superheater Co., New York City. Pp. 18. These tables are reprinted from the new seventh edition of the handbook "Superheat Engineering Data."

Blasters' Handbook, by Arthur La Motte. E. I. duPont de Nemours & Co., Wilmington, Del. Pp. 214; pocket size. Contains sections devoted to pellet powder, electric firing and new practices in regard to coal mining.

Caterpillar Power for Mines and Quarries. Caterpillar Tractor Co., San Leandro, Calif. Pp. 20; illustrated. Gives the record of these caterpillars in mines as well as other fields.

Rotator Rock Drills. Sullivan Machinery Co., Chicago, Ill. Bulletin 81-T. Pp. 16; illustrated. Describes the L-S drill for all-around rock drilling service, from shotholes in anthracite mining to general-purpose drilling in quarrying and on contract work.

The Link Belt Co. recently issued Crawler Crane Book No. 995, entitled "Built for Service," covering gasoline, Diesel and electric crawler cranes.

CRAMP-MORRIS INDUSTRIALS, INC., Philadelphia, Pa., announces the removal of the De La Vergne Machine Co., one of its subsidiaries, from New York to Philadelphia, where operations will be carried on in part of the former Cramp shipyards.

STEELS FOR NITRIDING are now being manufactured in the United States by the Central Alloy Steel Corporation, Massillon, Ohio, and the Ludlum Steel Co., Watervliet, N. Y., under special American rights to the patent, using the trade name "Nitalloy."

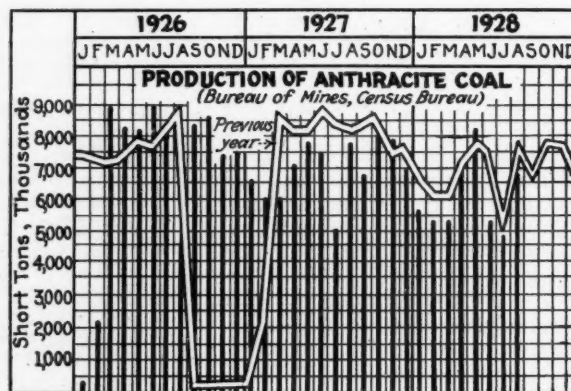
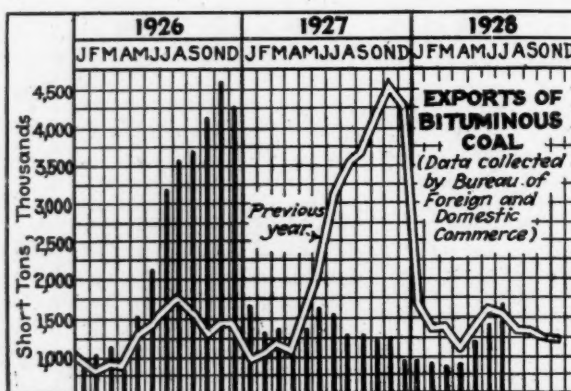
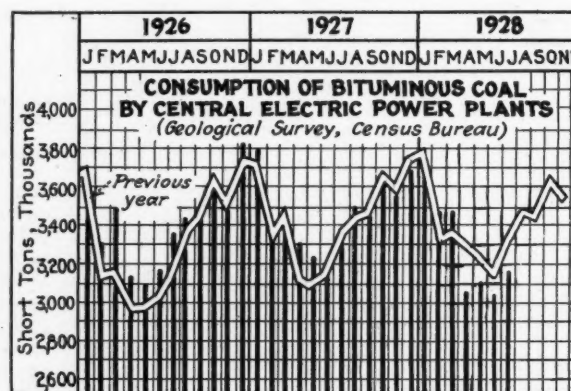
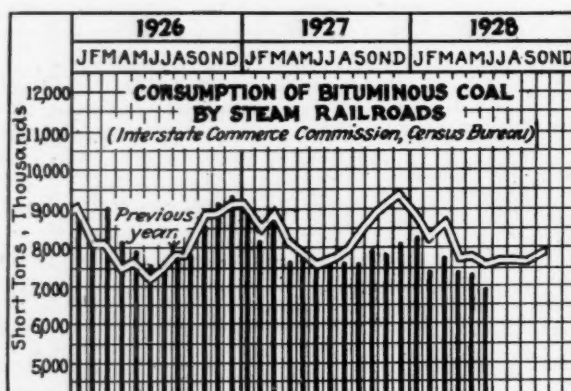
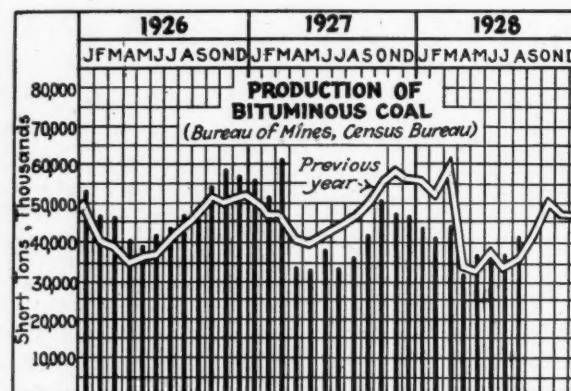
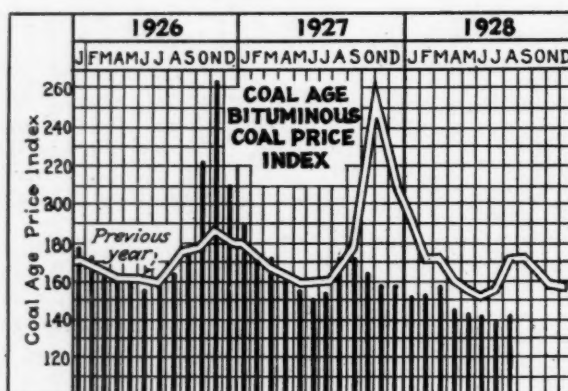
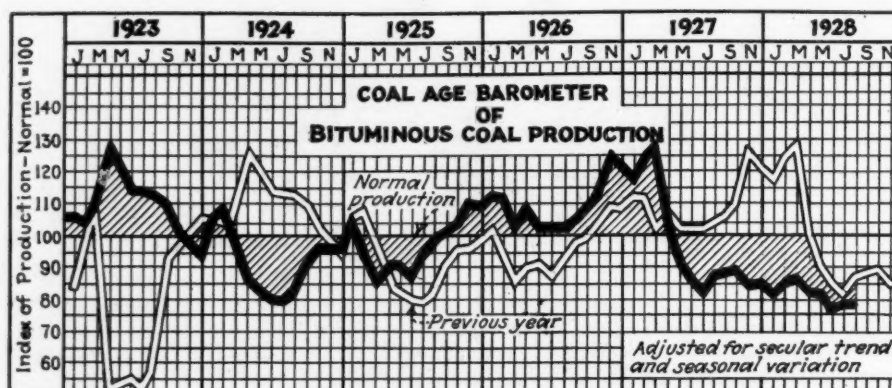
THE BROWN-FAYRO CO., Johnstown, Pa., has acquired the Austin mine gathering pump business of Dravo-Doyle Co., Pittsburgh, Pa. Edward F. Austin has severed his connection with Dravo-Doyle Co. and will be in charge of the Pittsburgh office and warehouse of the Brown-Fayro Co. as vice-president and manager. Benjamin F. Faunce, chairman of the board of Brown-Fayro, has resigned as superintendent of the car department of the Cambria plant of the Bethlehem Steel Corporation and will devote his entire time to the operation of the Brown-Fayro Co.

THE DEMING CO., Salem, Ohio, recently moved its office from the old location adjoining the main plant to a modern two-story building located opposite the main plant.

THE ROLLER-SMITH CO., New York City, announces the appointment of Elliott E. Van Cleef, 53 W. Jackson Boulevard, Chicago, Ill., as district sales agent in Chicago territory.

THE WAGNER ELECTRIC CORPORATION, St. Louis, Mo., announces the addition of Charles J. Arthur to the Philadelphia office as a salesman. Mr. Arthur was until recently sales engineer for the A. R. Amos, Jr., Co., Philadelphia. A. E. Herzberg, manager of the transformer sales division, has been promoted from the grade of major of the U. S. Army Reserve to the grade of lieutenant-colonel.

# Indicators of Activities in the Coal Industry





# MARKETS

## *in Review*

**C**ONDITIONS in the bituminous coal trade the past month presented a composite picture of the situation in general industry and of the reactions arising out of readjustments peculiar to coal mining. Production showed a moderate increase over July figures, reflecting the happy industrial stability emphasized in trade comments on general business and the steadily diminishing stockpiles in the hands of the consumers.

The level of spot prices also registered a slight increase. This, however, was due to shifts in tonnage and not to the influence of heavier buying. In some fields producers have reached that stage where continued sales at a dead loss have lost their fascination. *Coal Age* Index of spot bituminous prices for the month averaged 143; the weighted average price was \$1.73.

By weeks the Index figures were: Aug. 4, 143; Aug. 11, 144; Aug. 18, 142, and Aug. 25, 143. The corresponding weighted average prices were \$1.73, \$1.74, \$1.72 and \$1.73. These are preliminary figures. The revised figures for July were: 141 for the week of July 7, 140 for July 14, 141 for July 21 and 25, with weighted average prices of \$1.71, \$1.70 and \$1.71, making the Index for the month 140½ and the average price \$1.70½.

**AUGUST** bituminous production, according to the preliminary estimates of the U. S. Bureau of Mines, were 41,041,000 net tons, as against 36,276,000 tons in July, which had two less working days. The average output per working day, however, rose from 1,451,000 tons in July to 1,520,000 tons in August. West Virginia and Kentucky

appeared to have the greatest difficulty in regulating supply to demand.

This difficulty was intensified by the uncertainty as to future wage scales in the union regions. A tentative agreement was not reached in Illinois until Sept. 1, but contracts formulated before that time in certain other sections and at lower rates than those finally endorsed by the Illinois committee did not lighten the marketing problems of the Southeastern states.

In Illinois at least there seems to be a general disposition upon the part of the operators to endeavor to sell coal without further recourse to price-cutting. It is their feeling apparently that the readjustment which they should be called upon to make to meet the competitive situation was made well in advance of the relief now promised.

**ANTHRACITE**, which has been in the dumps for several weeks, gained sharply in production last month. The August total output was 6,789,000 net tons as compared with 4,475,000 tons in July. The daily average increased from 179,000 to 251,000 tons. The increase of 25c. in price on all domestic sizes except pea, effective Sept. 1, was the major factor in boosting production.

Because the buying movement was late in getting under way last month it seems likely that some of the business placed will be reflected in better running time the forepart of September. What happens after that time, however, will furnish a real test as to the success of the campaigns being waged by the hard-coal industry to recover lost markets.

There are some spokesmen for the anthracite trade who predict full-time operation for some time to come. Even

if these optimistic predictions should prove to be well founded, however, total output for the current calendar year would hardly be able to reach the total mined in 1924.

**PENDING** ratification of the new wage agreement large industrial buyers are placing orders sparingly in the Chicago market. The ordinary run of Indiana and western Kentucky screenings have been selling at \$2.75@2.85 f.o.b. Chicago. Representative producers in southern Illinois and the Fourth Vein Indiana field, however, have held firm against the pressure for further price concessions.

There has been a gradual but limited improvement in demand for domestic sizes as retailers have become convinced that the new wage scale will bring no reduction in mine quotations on prepared coal. As a matter of fact, prices on Illinois and Indiana coals were advanced the first of the month, with southern Illinois prices to the trade up 25c. Anthracite and coke are moving more freely.

The situation with respect to smokeless coals is fair, with offerings of lump and egg readily absorbed. Standard shippers in the Pocahontas and New River fields report a comfortable backlog of orders in prepared coal and shipments of mine-run are not exactly discouraging. Dealers are ordering more coal on contract, primarily to meet current orders. September contract prices are at August levels.

**AUGUST** was a disappointment to the St. Louis trade. While wage negotiations were going on at Chicago every consumer that could held off on buying

### Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Aug. 4, 1928		Aug. 11, 1928		Aug. 18, 1928		Aug. 25, 1928	
	Independent	Company	Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$8.25	Philadelphia.....	\$8.25	New York.....	\$8.25	Philadelphia.....	\$8.25
Broken.....	Philadelphia.....	\$8.25@8.50	New York.....	\$8.25@8.50	Philadelphia.....	\$8.25@8.50	New York.....	\$8.25@8.50
Egg.....	New York.....	8.25@8.50	Philadelphia.....	8.25@8.50	New York.....	8.25@8.50	Philadelphia.....	8.25@8.50
Egg.....	Philadelphia.....	8.50@8.75	New York.....	8.50@8.75	Philadelphia.....	8.50@8.75	New York.....	8.50@8.75
Egg.....	Chicago*.....	7.59	Chicago*.....	7.59	Chicago*.....	7.59	Chicago*.....	7.59
Stove.....	New York.....	8.60@8.85	Philadelphia.....	8.60@8.85	New York.....	8.60@8.85	Philadelphia.....	8.60@8.85
Stove.....	Philadelphia.....	8.85@9.10	New York.....	8.85@9.10	Philadelphia.....	8.85@9.10	New York.....	8.85@9.10
Stove.....	Chicago*.....	7.90	Chicago*.....	7.90	Chicago*.....	7.90	Chicago*.....	7.90
Chestnut.....	New York.....	8.10@8.50	Philadelphia.....	8.10@8.50	New York.....	8.10@8.50	Philadelphia.....	8.10@8.50
Chestnut.....	Philadelphia.....	8.50@8.75	New York.....	8.50@8.75	Philadelphia.....	8.50@8.75	New York.....	8.50@8.75
Chestnut.....	Chicago*.....	7.59	Chicago*.....	7.59	Chicago*.....	7.59	Chicago*.....	7.59
Pea.....	New York.....	4.50@5.00	Philadelphia.....	4.50@5.00	New York.....	4.50@5.00	Philadelphia.....	4.50@5.00
Pea.....	Philadelphia.....	5.00@5.25	New York.....	5.00@5.25	Philadelphia.....	5.00@5.25	New York.....	5.00@5.25
Pea.....	Chicago*.....	4.45	Chicago*.....	4.45	Chicago*.....	4.45	Chicago*.....	4.45
Buckwheat.....	New York.....	2.85@3.00	Philadelphia.....	2.85@3.00	New York.....	2.85@3.00	Philadelphia.....	2.85@3.00
Buckwheat.....	Philadelphia.....	3.00@3.25	New York.....	3.00@3.25	Philadelphia.....	3.00@3.25	New York.....	3.00@3.25
Buckwheat.....	Chicago*.....	2.70	Chicago*.....	2.70	Chicago*.....	2.70	Chicago*.....	2.70
Rice.....	New York.....	2.00@2.25	Philadelphia.....	2.00@2.25	New York.....	2.00@2.25	Philadelphia.....	2.00@2.25
Rice.....	Philadelphia.....	2.25@2.50	New York.....	2.25@2.50	Philadelphia.....	2.25@2.50	New York.....	2.25@2.50
Barley.....	New York.....	1.35@1.75	Philadelphia.....	1.35@1.75	New York.....	1.35@1.75	Philadelphia.....	1.35@1.75
Barley.....	Philadelphia.....	1.75@2.00	New York.....	1.75@2.00	Philadelphia.....	1.75@2.00	New York.....	1.75@2.00

\*Net tons, f.o.b. mines. † Domestic buckwheat, \$3.25 (P. & R.) and \$3.50 (D. L. & W.).

in the hope that a new agreement would mean lower prices. As a result of slow buying for weeks past stocks in the hands of industrial consumers are said to be unusually low. On the domestic side deliveries are reported to be 75 per cent behind last year.

Kentucky operators are inclined to be lugubrious over the recent outlook—particularly in the western part of the state, where tonnage is less than half of what it was a year ago. Eastern Kentucky too is complaining that shipments to the lakes have not measured up to expectations, but the movement plus heavier buying of prepared sizes by the retailers has made slack heavy and depressed prices.

The falling off in general demand in west Kentucky, on the other hand, has contributed to firmness in screenings quotations, which are fairly steady at 80c. @ \$1. The market for pea-and-slack for automatic stokers is growing to such an extent that prices for this grade are above former levels. Industrial demand in the Louisville section is fair and public utilities are buying more coal.

**O**PTIMISM is rampant in the Northwest despite declines in grain prices following on the heels of the harvesting of good spring crops. Dock operators have entered liberal seasonal bookings. An active canvass of regular business has yielded contract renewals upon approximately 90 per cent of the tonnage. Industrial consumers and public utilities have been good buyers for September delivery.

Shipments of coal from the docks

aggregated 12,585 cars in July as compared with 12,279 cars in the preceding month and 13,267 cars in July, 1927. August shipments, it is estimated, will not exceed 13,500 cars, as against 23,703 cars a year ago. The sharp decline is attributed to the early fall buying movement last year. It is expected that shipments this month will balance the account.

The steady flow of coal from the lower ports is beginning to worry some of the dock operators at the Head of the Lakes who fear congestion. Bituminous stocks on the docks at the upper ports as of Sept. 1 are estimated at 6,000,000 tons; anthracite, 700,000 tons. Official figures for Aug. 1 were 5,103,000 tons of bituminous coal and 623,000 tons of anthracite.

**D**UMPINGS of cargo coal at the lower lake ports for the season to Sept. 1 were 20,385,000 net tons. Vessel-fuel dumpings of 820,000 tons brought the total to 21,205,000 tons. The movement to date is ahead of that for the corresponding periods in 1925 and 1926 and less than 3,000,000 tons behind the 1927 figures despite the fact that the 1928 season opened later.

Prospects of reopening deep-shaft mines in Kansas this month as the result of the new agreement in the Southwest resulted in an easier market in screenings at Kansas City toward the end of August. Quotations on domestic sizes, however, were well maintained throughout the month and demand for such coal moved upward about the middle of August.

A marked improvement was noticeable in the demand for domestic sizes of Colorado and Wyoming coals during the past month. Increased prices effective Sept. 1 probably furnished the chief incentive for the heavier buying. August prices on Walsenburg-Canon City lump were \$5.75; chestnut and washed nut, \$4.75; Trinidad coking lump, \$3.75; nut, \$3.50; fancy chestnut, \$3.25; Crested Butte anthracite, \$9.50 (furnace, egg and base-burner) and \$7.25 (brooder mixture); northern Colorado lignite fancy lump, \$2.75; mine-run, \$2.50. Rock Springs and Kemmerer lump was \$5; nut, \$4.50. Steam sizes, \$1.25 @ \$1.40.

**M**IDSUMMER dullness, the lake-rate situation and continued indifference upon the part of the buyers combined to make August a disappointing month to the Cincinnati trade. The worst feature of the situation was that nothing was forecast which would work for an early improvement in prices or in demand. Although weekly movement through the Cincinnati gateway last month was 2,600 to 5,200 cars behind last year, there is a feeling that further curtailment will be necessary.

Domestic buyers have been flirting with the market but few inquiries have been translated into orders. Retailers plead credit conditions in defense of their failure to buy more liberally. Utilities appear satisfied to cover only part of their requirements by contract. Industries seem unconcerned when storage is broached.

The trade at Columbus was quiet and featureless the greater part of the past month but a somewhat better demand for domestic coal developed in the last few days of August. Producers and wholesalers hailed it as the forerunner of a brisker demand during the next six weeks although the present retail buying finds little support in orders placed by the household user, who continues backward.

**S**TEAM trade in central Ohio has not shared in the revival of interest which has come to the domestic side of the market. While some contracts have been closed at 20 to 25c. above current spot quotations, the bulk of the industrial buying is on the open market, with large consumers picking up blocks of tonnage at bargain figures. Public utilities are the most important factor in the steam market at the present time.

There was a broadening out in production in the Pittsburgh district last month but the expansion was below the seasonal average of former years when the district held a commanding position in the trade. The gains made in tonnage from commercial mines were due almost entirely to aggressive salesmanship.

Much more coal has been moving to the lower lake ports in recent weeks. However, aside from one large producing interest in the district, the Pittsburgh field as a whole has benefited only slightly from the readjustment in freight rates ordered by the Interstate

## Current Quotations—Spot Prices, Bituminous Coal, Net Tons, F.O.B. Mines

LOW-VOLATILE, EASTERN	Market Quoted	Week Ended			
		Aug. 4, 1928	Aug. 11, 1928	Aug. 18, 1928	Aug. 25, 1928
Smokeless lump.....	Columbus	\$3.00@3.25	\$3.00@3.25	\$3.00@3.25	\$3.00@3.50
Smokeless mine-run.....	Columbus	1.75@2.00	1.75@2.00	1.75@2.10	1.75@2.20
Smokeless screenings.....	Columbus	.85@1.00	.85@1.00	.85@1.00	.85@1.20
Smokeless lump.....	Chicago	3.25@3.50	3.25@3.50	3.25@3.50	3.25@3.50
Smokeless mine-run.....	Chicago	1.75@2.25	1.75@2.25	1.75@2.25	1.75@2.25
Smokeless lump.....	Cincinnati	3.00@3.50	3.25	3.25	3.00@3.50
Smokeless mine-run.....	Cincinnati	1.85@2.25	2.00@2.25	1.75@2.25	1.75@2.25
Smokeless screenings.....	Cincinnati	1.00@1.25	1.00@1.25	.50@1.25	.50@1.00
*Smokeless mine-run.....	Boston	4.00@4.10	4.00@4.10	4.00@4.15	4.00@4.15
Clearfield mine-run.....	Boston	1.40@1.75	1.40@1.75	1.40@1.75	1.40@1.75
Cambria mine-run.....	Boston	1.80@2.20	1.80@2.20	1.80@2.25	1.85@2.25
Somerset mine-run.....	Boston	1.50@1.85	1.50@1.90	1.50@1.90	1.50@1.90
Pool 1 (Navy Standard)....	New York	2.30@2.50	2.30@2.50	2.30@2.50	2.30@2.50
Pool 1 (Navy Standard)....	Philadelphia	2.30@2.60	2.30@2.60	2.30@2.60	2.30@2.60
Pool 1 (Navy Standard)....	Baltimore	2.10@2.25	2.10@2.25	2.10@2.25	2.10@2.25
Pool 9 (super low vol.)....	New York	1.70@1.95	1.70@1.95	1.70@1.95	1.70@1.95
Pool 9 (super low vol.)....	Philadelphia	1.80@2.15	1.80@2.15	1.80@2.15	1.80@2.15
Pool 9 (super low vol.)....	Baltimore	1.70@1.80	1.70@1.80	1.70@1.80	1.70@1.80
Pool 10 (h. gr. low vol.)....	New York	1.55@1.85	1.55@1.85	1.55@1.85	1.55@1.85
Pool 10 (h. gr. low vol.)....	Philadelphia	1.60@1.80	1.60@1.80	1.60@1.80	1.60@1.80
Pool 10 (h. gr. low vol.)....	Baltimore	1.50@1.60	1.50@1.60	1.50@1.60	1.50@1.60
Pool 11 (low vol.).....	New York	1.40@1.60	1.40@1.60	1.40@1.60	1.40@1.60
Pool 11 (low vol.).....	Philadelphia	1.40@1.65	1.40@1.65	1.40@1.65	1.40@1.65
Pool 11 (low vol.).....	Baltimore	1.35@1.40	1.35@1.40	1.35@1.40	1.35@1.40
HIGH-VOLATILE, EASTERN					
Pool 54-64 (gas and st.)....	New York	\$1.25@1.40	\$1.25@1.40	\$1.25@1.40	\$1.25@1.40
Pool 54-64 (gas and st.)....	Philadelphia	1.25@1.40	1.25@1.40	1.25@1.40	1.25@1.40
Pool 54-64 (gas and st.)....	Baltimore	1.15@1.35	1.15@1.35	1.15@1.35	1.15@1.35
Pittsburgh sc'd gas.....	Pittsburgh	2.00@2.25	2.00@2.25	2.00@2.15	2.00@2.10
Pittsburgh gas mine-run....	Pittsburgh	1.75@1.90	1.75@1.90	1.75@1.90	1.75@1.90
Pittsburgh st. mine-run....	Pittsburgh	1.40@1.90	1.40@1.90	1.40@1.90	1.40@1.90
Pittsburgh gas slack.....	Pittsburgh	1.20@1.25	1.20@1.25	1.15@1.25	1.15@1.25
Kanawha lump.....	Columbus	1.75@2.15	1.75@2.15	1.75@2.10	1.70@2.15
Kanawha mine-run.....	Columbus	1.25@1.60	1.25@1.60	1.25@1.55	1.25@1.60
Kanawha screenings.....	Columbus	1.00@1.15	1.00@1.20	1.00@1.20	1.00@1.20
W. Va. lump.....	Cincinnati	1.60@2.50	1.65@2.50	1.50@2.50	1.50@2.50
W. Va. gas mine-run.....	Cincinnati	1.40@1.60	1.40@1.65	1.40@1.65	1.40@1.60
W. Va. steam mine-run....	Cincinnati	1.10@1.40	1.10@1.50	1.10@1.40	1.10@1.40
W. Va. screenings.....	Cincinnati	.45@1.00	.65@1.00	.50@1.00	.35@1.00
Hocking lump.....	Columbus	2.00@2.25	2.00@2.25	2.00@2.25	2.00@2.25
Hocking mine-run.....	Columbus	1.60@1.75	1.60@1.75	1.60@1.75	1.60@1.75
Hocking screenings.....	Columbus	1.15@1.30	1.10@1.30	1.15@1.30	1.15@1.35
Pitta. No. 8 lump.....	Cleveland	1.75@2.15	1.75@2.15	1.75@2.15	1.75@2.15
Pitta. No. 8 mine-run.....	Cleveland	1.40@1.75	1.40@1.75	1.40@1.75	1.40@1.75
Pitta. No. 8 screenings.....	Cleveland	1.00@1.25	1.00@1.25	1.00@1.25	1.00@1.25

\* Grosse tons, f.o.b. vessel, Hampton Roads



Commerce Commission. An analysis of shipments discloses that the Ohio No. 8 and northern West Virginia districts have made substantial gains under the readjustment.

**S**TEAM coal prices in New England show a steadier tone and there is less hard driving for sales at any figure than was in evidence a month ago. The improvement is due less to increased demand than to better control of supply and correlation of shipments with reasonable expectations of sales. There is less car detention chalked up at the terminals at Hampton Roads and prices as a result are firmer.

Navy Standard coal is being closely held at \$4@4.10 per gross ton, f.o.b. vessels at Hampton Roads; in exceptional cases as high as \$4.25 has been obtained. An effort is being made to net \$1 at the mines—\$3.64 per gross ton, f.o.b. vessel—for nut-and-slack, but offerings as low as \$3.50 at the piers were current until a few days ago. Straight slack has been held at \$3.25@3.40. On cars at Boston nut-and-slack is selling at \$4.80@4.95 for inland delivery; advances are forecast. Mine-run on cars is quoted at \$5.35, with figures a shade higher on small lots. Providence is quoting 10c. under Boston.

There has been no change in the situation on all-rail central Pennsylvania coals. High-grade Cambria coal suitable for domestic purposes is commanding up to \$2.25 at the mines, with less desirable coals shading down to \$1.75 or less. The Special Commission on the Necessaries of Life, pointing to the fact that retail deliveries of anthracite in Massachusetts from April 1 to July 31 were about 183,000 net tons less than last year and that coke deliveries are off about 374,000 tons, is urging consumers to speed up buying.

**T**HE soft-coal market at New York is looking up. Buyers are making inquiries and the outlook for a fairly active September appears promising. Spot buyers seeking the best grades of coal are not always able to pick up the tonnages desired in the open market. The tidewater trade was quiet during August, as shippers avoided sending forward excess tonnage.

Philadelphia reported signs of a better buying movement in August but the volume of expansion was disappointing to those factors in the trade that had set their hopes high. The idea of a boom period is generally discounted, but there is a growing feeling that there will be a gradual broadening in demand during the remaining months of the coal year. A distinct increase in the number of inquiries reaching local offices is looked upon as the harbinger of this development.

One of the biggest disappointments to the Philadelphia trade has been the continued disinclination of the railroads to come into the market for storage coal. Early last month there were rumors that a buying movement would get under way about the middle of the month, but this movement did not materialize.

**B**IRMINGHAM found the coal market dull throughout the month of August. The amount of new business booked was negligible. Notwithstanding curtailed production it was difficult to place odd lots of spot steam coal—even at concessions in price. Contract shipments to industries and railroads were held close to the minima permissible under the sales agreements. Bunker demand was extremely light. Quotations on steam sizes showed little change from July figures.

There was some improvement in domestic business when compared with July but the trade as a whole was draggy. Many retail distributors are clinging to a hand-to-mouth buying policy and there has been very little of the drift of small orders normally coming in at this season of the year. September prices are up 15 and 20c.; Cahaba lump is \$4.25@5; Black Creek, \$4.50@4.75; Corona, \$3.50; Montevallo, \$5@5.75.

Metallurgical coke in the Birmingham district is showing more life. Foundry coke is fairly steady at \$5 for both spot and contract sales. Domestic coke, however, is still lagging at \$4.70 for egg and stove and \$3.25@3.70 for nut.

**T**HERE was a decided uplift in the anthracite market at New York the last half of August as a result of the early announcement that September prices on egg, stove, nut and buckwheat would be increased 25c. Prior to the announcement buying was quiet. With the month-end revival in interest on the part of the retailers the total volume of business was ahead of July.

Curtailed operations at the mines the forepart of the month helped independent operators in keeping quotations

on their coals, exclusive of pea, within 25c. of company prices. Buckwheat was in good demand at all times; for a brief period independent coal commanded a slight premium over \$3. Rice and barley were easy.

As at New York it was past the middle of the month before retail dealers began to order in volume through Philadelphia sales agencies. The delay in the start of the buying movement left many operators who had planned full-time production with surplus cars. When the buying movement started, however, orders came with such a rush that egg and stove were badly oversold.

**P**RODUCTION was the controlling factor in the steam situation. With running time cut down there were no surplus offerings of any steam size in the Philadelphia market; in fact, some sizes were scarce. Buckwheat in particular was in a strong position and no shipper was looking for business on this size after the middle of the month.

Exports of bituminous coal from the United States during July—the latest month for which figures are available—totaled 1,502,575 gross tons as compared with 1,276,843 tons in June and 1,530,669 tons in July, 1927. Anthracite exports were 167,278 tons as compared with 209,375 tons in June and 228,131 tons in July, 1927.

Canada continues by far the largest buyer of American coal and coke. In July exports of coal and coke to Canada absorbed 1,472,832 tons out of the total movement of 1,748,886 tons. During the same month the United States imported 10,581 tons of anthracite, 26,249 tons of bituminous coal (of which 22,760 tons came from Canada) and 9,258 tons of coke.

### Current Quotations—Spot Prices, Bituminous Coal, Net Tons, F.O.B. Mines

		Week Ended			
		Aug. 4, 1928	Aug. 11, 1928	Aug. 16, 1928	Aug. 25, 1928
<b>MIDDLE WEST</b>					
Franklin (Ill.) lump.....	Chicago	\$2.75	\$2.75	\$2.75	\$2.75
Franklin (Ill.) mine-run....	Chicago	2.25@ 2.40	2.25@ 2.40	2.25@ 2.40	2.25@ 2.40
Franklin (Ill.) screenings....	Chicago	1.40@ 1.60	1.40@ 1.60	1.40@ 1.60	1.40@ 1.60
Central (Ill.) lump.....	Chicago	2.40@ 2.50	2.40@ 2.50	2.40@ 2.50	2.40@ 2.50
Central (Ill.) mine-run....	Chicago	1.85@ 2.25	1.85@ 2.25	1.85@ 2.25	1.85@ 2.25
Central (Ill.) screenings....	Chicago	1.20@ 1.75	1.20@ 1.75	1.20@ 1.75	1.20@ 1.75
Ind. 4th Vein Lump.....	Chicago	2.40@ 2.75	2.40@ 2.75	2.40@ 2.75	2.40@ 2.75
Ind. 4th Vein mine-run....	Chicago	1.40@ 2.25	1.80@ 2.25	1.40@ 2.25	1.40@ 2.25
Ind. 4th Vein screenings....	Chicago	1.35@ 1.70	1.35@ 1.75	1.35@ 1.75	1.35@ 1.75
Ind. 5th Vein lump.....	Chicago	2.10@ 2.40	2.10@ 2.40	2.10@ 2.40	2.10@ 2.40
Ind. 5th Vein mine-run....	Chicago	1.15@ 2.10	1.15@ 2.10	1.15@ 2.60	1.15@ 2.10
Ind. 5th Vein screenings....	Chicago	1.05@ 1.35	1.05@ 1.35	1.05@ 1.35	1.05@ 1.35
Mount Olive lump.....	St. Louis	2.35	2.35	2.35	2.35
Mount Olive mine-run....	St. Louis	2.25	2.25	2.25	2.25
Mount Olive screenings....	St. Louis	1.40	1.40	1.40	1.40
Standard lump.....	St. Louis	1.90@ 2.10	1.90@ 2.10	1.90@ 2.10	1.90@ 2.10
Standard mine-run....	St. Louis	1.65@ 1.75	1.65@ 1.75	1.65@ 1.75	1.65@ 1.75
Standard screenings....	St. Louis	.90@ 1.00	.90@ 1.00	.90@ 1.00	.90@ 1.00
West Ky. block.....	Louisville	1.25@ 1.50	1.25@ 1.50	1.25@ 1.50	1.25@ 1.50
West Ky. mine-run....	Louisville	.90@ 1.10	.90@ 1.10	.90@ 1.10	.90@ 1.10
West Ky. screenings....	Louisville	.80@ 1.00	.80@ 1.00	.80@ 1.00	.80@ 1.00
West Ky. block.....	Chicago	1.25@ 1.50	1.25@ 1.56	1.25@ 1.50	1.25@ 1.50
West Ky. mine-run....	Chicago	.85@ 1.20	.85@ 1.20	.85@ 1.20	.85@ 1.20
West Ky. screenings....	Chicago	.70@ .85	.70@ .85	.60@ .75	.50@ 0.65
<b>SOUTH AND SOUTHWEST</b>					
Big Seam lump.....	Birmingham	\$1.75@2.00	\$1.75@2.00	\$1.75@2.00	\$1.75@2.00
Big Seam mine-run....	Birmingham	1.25@ 1.50	1.25@ 1.50	1.25@ 1.50	1.25@ 1.50
Big Seam (washed).....	Birmingham	1.50@ 2.00	1.50@ 2.00	1.50@ 2.00	1.50@ 2.00
S. E. Ky. block.....	Chicago	2.00@ 2.25	2.00@ 2.50	2.00@ 2.50	2.00@ 2.50
S. E. Ky. mine-run....	Chicago	1.50@ 1.65	1.50@ 1.75	1.50@ 1.75	1.50@ 1.75
S. E. Ky. block.....	Louisville	1.75@ 2.25	1.75@ 2.50	1.75@ 2.50	1.75@ 2.50
S. E. Ky. mine-run....	Louisville	1.30@ 1.60	1.30@ 1.60	1.30@ 1.60	1.30@ 1.60
S. E. Ky. screenings....	Louisville	.65@ 1.00	.65@ 1.00	.65@ 1.00	.65@ 1.00
S. E. Ky. block.....	Cincinnati	1.75@ 2.50	1.75@ 2.50	1.50@ 2.50	1.50@ 2.50
S. E. Ky. mine-run....	Cincinnati	1.15@ 1.65	1.10@ 1.65	1.10@ 1.75	1.10@ 1.60
S. E. Ky. screenings....	Cincinnati	.40@ 1.25	.60@ 1.00	.50@ 1.00	.35@ 1.00
Kansas shaft lump.....	Kansas City	3.75	3.75	3.75	3.75
Kansas strip lump.....	Kansas City	3.25	3.25	3.25	3.25
Kansas mine-run....	Kansas City	2.75	2.75	2.75	2.75
Kansas screenings....	Kansas City	2.10@ 2.25	2.10@ 2.25	1.85@ 2.00	1.85@ 2.00

# WHAT'S NEW

## In Coal-Mining Equipment

### Large Shovel Designed For Easy Moving

Indicative of the trend toward the more powerful, greater-capacity machine is the announcement by the Link-Belt Co., Chicago, of the addition of full 2-yd. capacity units to their line of crawler cranes, shovels and draglines. Heretofore the largest capacity machine built by this company was a 1½-yd. unit.

The Link-Belt K-55, as the new type is known, is a powerful, heavy duty all-purpose machine, primarily designed, with the proper attachments, for four purposes: shovel with 30 ft. boom and 18-ft. dipper stick, carrying a 2-yd. struck-measure-capacity all manganese steel dipper; dragline for handling a 2-yd. dragline bucket, for medium and medium-heavy excavating, on a 50-ft. boom, or a 1½-yd. dragline bucket on a 60-ft. boom; clamshell bucket of 2-yd. capacity, for sand, gravel or materials of equal weight on boom 50 ft. long, or a 1½-yd. bucket on a 60-ft. boom; trench shovel having a 2-yd. capacity. All attachments are interchangeable without removing or disturbing the mechanism of the machine proper.



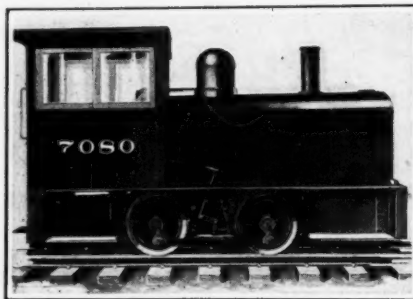
No Trouble to Move It

While useful in many places where large production is required, a special clearance-reducing arrangement contributes to making the machine a particularly convenient one for the contractor. It is possible to ship it from place to place with a considerable saving in time and money.

### Gasoline Locomotive Has New Drive Principle

A gasoline locomotive said to be entirely new in design and drive principle has been brought out by H. K. Porter Co., Pittsburgh, Pa.

The power plant, clutch and transmission are mounted on steel sub-frame



New in Design and Drive

and form a straight line drive to the reverse unit. This sub-frame acts as a torque arm pivoted on the rear axle and spring suspended at the front to the main frame. By an ingenious arrangement the weight of the rear end of the sub-frame is carried on the main frame by a coil spring.

The result is that all the vital parts of the locomotive—the engine, radiator, clutch transmission and reverse unit—are mounted on a sub-frame which is spring-suspended to a spring-suspended cross-equalized main frame.

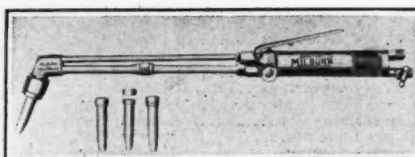
The main frames and bumpers are made of rolled steel slabs. The running gear, including steel-tired driving wheels, side rods, driving boxes, shoes, wedges, springs etc., is the same as on the Porter steam dinkey.

### Cutting and Welding Torch Saves Time

The new Milburn combination cutting and welding torch—Type TI—is a step forward in speeding up welding and cutting operations and in saving labor and gases. To switch from a cutting to a welding flame or vice-versa it is not necessary to change the tip, only a turn of the tip being required.

In one position the gases are automatically passed through the preheating gas passages while the high-pressure oxygen is carried through the central hole for cutting. In the next position, reached by a quarter turn of the tip, the

Cutting and Welding Torch Using One Set of Tips



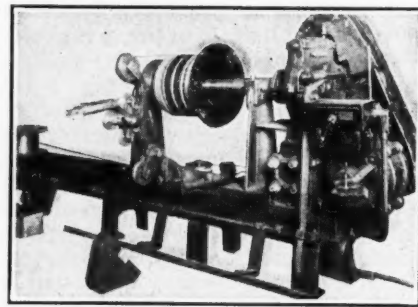
cutting oxygen is shut off and the welding gases are conveyed through the central passages of the cutting tip.

Torch heads, valves, bases and other parts are of brass forgings having a tensile strength of 5,000 lb. per square inch. This results in a much lighter and less tiring machine.

### Device Prevents Overwind Of Armatures

An indicating device for use in the repair of railway and industrial haulage motor armatures has been developed by the General Electric Co., Schenectady, N. Y. This device, which can be applied to practically any type of armature binding machine, is equipped with a rotary dial that can be set to indicate the exact strain or tension in pounds that is applied to the steel binding wire by the binding machine or lathe.

By use of the tension indicator the binding wire will not be stressed beyond the elastic limit or tensile strength of the steel and will be kept under uniform



Tension Indicator Applied to Armature Binding Lathe

tension during the winding process. A heavy coil spring keeps a constant tension on the wire while starting and stopping and at all loads, thus preventing the wires from loosening.

### Strength Is Feature of New Controller

Strength and ease of operation are claimed for the new E C & M Dinkey controller made by the Electric Controller & Mfg. Co., Cleveland, Ohio. New features include a welded steel frame, main arm supported in ball bearings, nickel-alloy resistors and ebony asbestos in place of slate. The con-



## What's NEW in Coal-Mining Equipment



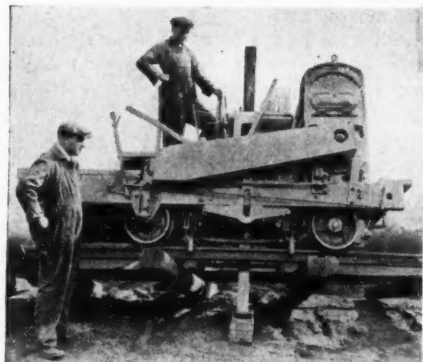
Ball Bearings Part of This Controller

tact supporting lugs are attached to the face of the dial and are removable from the front; each contact lug has a single square-head setscrew to tightly clamp the lead wire. The arm and quadrant bearings as well as the dial is supported by the bearing-spider castings, insuring correct alignment.

### Shifter Moves Track With Small Crew

Shifting or raising of narrow-gage track in open-pit bituminous and anthracite mines may be done with the new Model "O" track shifter made by the Nordberg Mfg. Co., Milwaukee, Wis. The machine operator and several laborers will replace the usual track crew, resulting in faster work and a saving in labor cost. The width of the narrow-gage machine is 5 ft. 5 in.; length, 12 ft. 1 in., and wheelbase, 5 ft. 5 in. The frame is made of 8-in. channels and all joints are welded. Power is supplied by a 4-cylinder, 15-hp. fully inclosed gasoline unit.

Shifter in Action



### Improved Blower Has Many Uses

Super-power and great durability are claimed for the new Ideal portable electric combination blower and suction devices, manufactured by the Ideal Commutator Dresser Co., Sycamore, Ill. These blowers are simple in construction, take their power from the lighting circuit and do not require expensive equipment.

These machines blow only dry air and depend upon great air velocity at low pressure instead of high pressure, and therefore can be used for delicate cleaning jobs. They can be equipped with a number of suction attachments, a paint and liquid spray attachment and an insecticide attachment. The Giant model



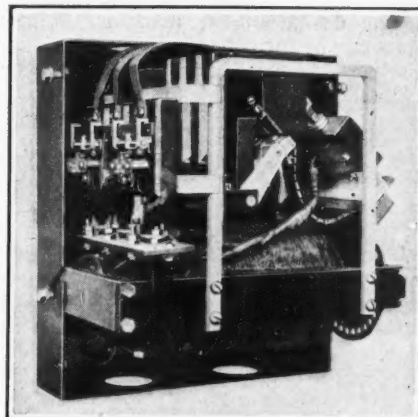
A Versatile Machine

is for ordinary use and the Super-Giant model delivers air for heavy blowing. A new model hot and cold air machine delivers blasts of either, the former being of value in drying out damp equipment.

### Automatic Starter Has Adjustable Features

An automatic induction starter with two adjustable features has been added to the line of the Lincoln Electric Co., Cleveland, Ohio. One of the adjustments, which is in the starting current and starting torque, is made by changing the position of the rotor in the regulator. This rotor is index mounted and the starting torque and starting current of the motor are increased by going to the higher numbers of the scale and decreased by going to the lower.

The other adjustment is in the current at which the throw-over takes place. The throw-over in this new starter is controlled by a retarding solenoid operated by the motor current. The pull of this solenoid can



Easy to Mount and Adjust

be adjusted by a simple lock rod arrangement carried on its plunger.

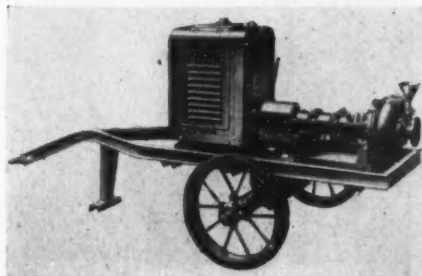
When the start button is compressed it applies the correct voltage to the motor and the starting current is held within the desired limits. After the motor comes to speed the current attained falls off. When it has fallen off to the desired amount the switch automatically sets itself in the running position without interrupting the torque of the motor. The motor is removed from the line by pushing the stop button.

If the front cover is removed the switch may be swung forward by removing the holding screw at the back. This brings the switch mechanism out to a better position for observation. The barriers also may be moved upward out of the way. By the release of a screw on the control switch panel the contact carrying arm will drop back, exposing all contacts for renewals or observation. The barriers completely inclose the contacts and six separate arc chimneys are provided to confine the arcs.

### Portable Pumping Unit Stands Rough Usage

A series of portable pumping units powered with Novo engines and using manganese steel for the parts subject to shock and abrasion, such as the shell, impeller and disk, has been announced by the American Manganese Steel Co., Chicago. An improved lubricating system and spring shock absorbers to min-

Rides on Shock Absorbers

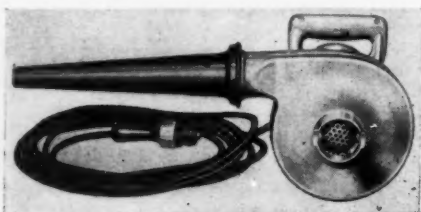


## What's NEW in Coal-Mining Equipment

imize shocks in transit are incorporated in the design of the machine. These units can be furnished with 2, 2½ or 3-in. discharge and capacities of 100, 150 or 230 gallons per minute respectively.

### Portable Blower Has High Velocity

The Martindale Electric Co., Cleveland, Ohio, is manufacturing a super-blower which is said to develop a greater pressure than is usual. This blower is powered with a ½-hp. over-size motor using 32, 110, 220 or 250



Sanitary Cop That Chases Dirt

volts and weighs 10 lb. Developing an air velocity of 286 ft. per second, this blower may be used for cleaning machinery, electrical equipment and other items.

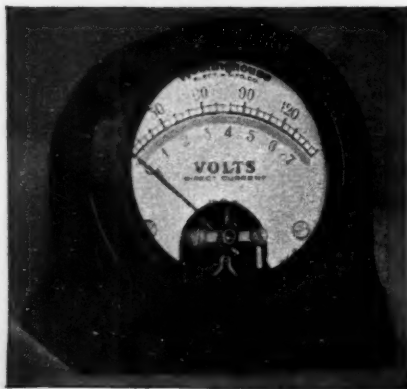
### Bring Out New Portable D.C. Instruments

A new line of portable direct-current instruments has been developed by the Westinghouse Electric & Mfg. Co. These instruments, known as type PX2, are particularly suitable for miscellaneous testing.

They are of the permanent magnet moving-coil type and operate on the D'Arsonval principle. The moving coil rests on hardened steel pivots moving in sapphire jewel bearings. The mechanism is mounted on a molded micarta base and has a case of the same material. A mirrored dial and a knife-edge pointer facilitate accurate reading.

This line of instruments includes millivoltmeters, double-range voltmeters, milliammeters, ammeters, radio frequency ammeters and galvanometers.

Portable Double-Range Voltmeter



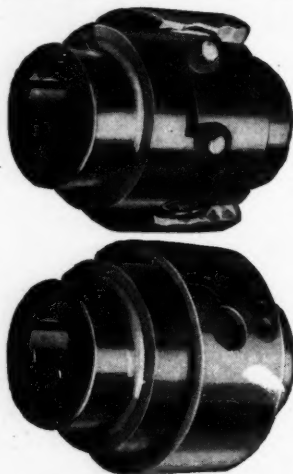
### Copperweld Wire Fence Resists Corrosion

Residential, industrial and institutional fences may now be made of Copperweld wire, according to the Copperweld Steel Co., Glassport, Pa. This new fence is made in both the "ornamental" and "chain link" varieties and is to be distributed through the Page Fence Association of Chicago. In making wire for Copperweld fence, a thick layer of ductile copper is molten welded to a steel core, making a combination copper and steel ingot.

The weld is continuous and it is claimed that neither bending, twisting, hot-rolling, cold-drawing, forging nor sudden temperature changes will destroy it. It is asserted that the welded copper exterior makes the life of the wire indefinite because of its rust-resisting qualities.

### Flexible Coupling Suited For Small Motors

A practical coupling known as the L.R., is being manufactured by the Foote Bros. Gear & Machine Co., Chicago. This coupling is particularly desirable for use with small fractional horsepower motors because of its flexibility and comparatively low cost. It is substantially a jaw coupling with radially disposed, loosely floating, resilient rollers, placed between jaws which extend from the flanges parallel with the shafts. This assures a rolling contact between them



Small But Rugged

upon relative movement caused either by misalignment or end movement of the shaft.

The coupling may be used for rotation in either direction, half the rollers being under compression and the other half idlers. Inasmuch as the force is transmitted by compression and a relative movement of the shafts is accomplished by a rolling movement of the power transmitting elements, not only will any end thrust be absent in the shafts but any radial thrust as well. The life of

the coupling is, therefore, practically unlimited and the coupled equipment is rendered perfectly safe and shock proof.

This coupling is best for direct-connecting small motors to the driven machine. There are no parts to lubricate, as at no time does it receive undue stress or action. Constructed with only a minimum number of parts, the L.R. coupling can be installed on the job and forgotten. True alignment and adjusting of the shafting is not so necessary.

### Material Moved Easily With TwinVeyor

The TwinVeyor, a device utilizing the push of revolving spirals by paralleling two tubes thus equipped and turning them over toward one another by a gas engine or electric motor, is announced by Curtis & Geer, Oakland, Calif. Sacks, packages and blocks may be conveyed to a desired destination, elevated to the top of a stack or automatically delivered to a chute.



Doing Its Stuff

The manufacturer claims that this conveying device will handle up to 1,800 sacks weighing from 100 to 200 lb. per hour.

### Trolley Clamp Has Single Or Dual Action

A dual Bulldog trolley clamp and companion fitting, the mine catenary clamp, have been announced by the Ohio Brass Co., Mansfield, Ohio. This trolley clamp is said to be a dual-action device in one respect in that it carries two wires, and a single-action device in another respect in that it accommodates itself to these two wires by one manual operation. In other words, it is designed to carry a feeder wire directly above the groove or trolley wire. Tightening the head nut causes the jaws of the clamp to grip or release both wires at the same time.

The catenary clamp, which is essential where the dual Bulldog is used, is placed in the space between the clamps to serve as a current path and as a steadier for the two wires. Both devices are made of Flecto malleable iron,



## What's NEW in Coal-Mining Equipment



Dual Trolley Clamp

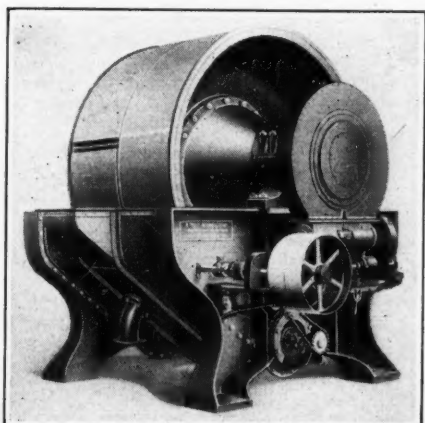
hot-dip galvanized. The dual Bulldog clamp is made for 0 and 4-0 groove and figure eight wire, and the catenary clamp for the 3-0 and 4-0 groove and figure eight wire.

### Cellular Vacuum Filter For Dewatering Sludge

A continuous cellular vacuum filter suitable for dewatering sludges, which is made by R. Wolf, A. G. Magdeburg, Germany, is being marketed by Morrill & Morrill, New York City, North American representatives of the manufacturer. Wash water containing fine material below  $\frac{1}{8}$  or  $\frac{1}{16}$  in. in size must ordinarily be allowed to stand in settling tanks in order to separate the sediment. The sludge recovered will then contain up to 35 per cent water. With the froth flotation process, the very fine coal obtained in the flotation boxes contains a high percentage of water, presenting a difficult problem of removal or disposal.

The rotary vacuum filter will remove the water from the sludges and yield a product which may be mixed with coking coal or with fuel destined for the furnace, as the case may be. Continental practice indicates that water percentage may be reduced to 20 or somewhat less. With a very small percentage of solid matter or with finely

Continuous Rotary Cellular Vacuum Filter for Mine Use

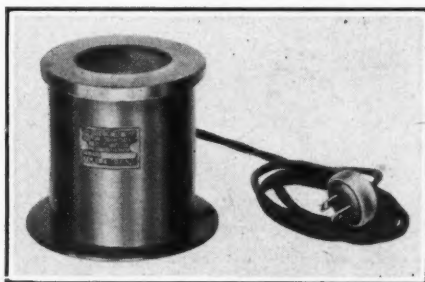


divided solid matter the final percentage of water will be higher. Slimes containing 70 per cent water may be treated at the rate of 22 tons per hour,  $8\frac{1}{2}$  tons coal with a water percent of 20 being obtained.

### Portable Melting Pot For Small Jobs

Small tinning and soldering operations can be handled with a portable tinning pot made by the General Electric Co., Schenectady, N. Y. The device is built on the same principle as the company's larger melting pots.

The heating unit, which is of the cartridge type, dissipates 150 watts. It is placed in a boss cast on the bottom



Handy for Small Operations

of the crucible and is readily removable. The crucible and base are made of cast iron, while the jacket is of sheet steel. The connecting lead is a heavy Delta-beston heater cord and the plug is of the armored type.

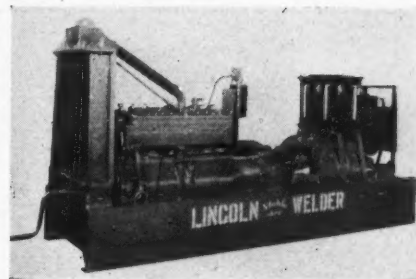
This pot is particularly designed for solder and tin, having a maximum operating temperature of 500 deg. F. About 15 minutes is required to reduce the full contents of the pot to working temperature.

Though normally designed for operation on a 110-volt circuit, the pot can also be supplied for operation on 100-, 120- and 240-volt circuits. It has an approximate shipping weight of 6 lb. The outside diameter of the pot is 5 in. and its depth  $4\frac{1}{2}$  in.

### Welder Is Strong, Safe And Light

A new 300-amp. gasoline engine driven welder, Model S-1964, is being made by the Lincoln Electric Co., Cleveland, Ohio. The welding generator is rated at 300 amp. but has a current range of from 75 to 400 amp. for metallic electrode welding, and is direct-connected to a six-cylinder Buda Model HS-6 engine, operating at 1,500 r.p.m. Both units are mounted on a welded steel base, thus giving maximum strength and rigidity with minimum weight.

The engine has an S.A.E. rating of 27.3 hp. and gives a brake horsepower



Light but Sturdy Welder

of 41 while running at the operating speed. It is said to be very economical in gasoline consumption. The gas tank is located in the channel iron frame under the engine, thus eliminating fire hazard.

The generator has the laminated magnetic circuit with separately excited field, stabilizer, variable voltage and steel construction features characteristic of the company's line of "Stable-Arc" welders.

The over-all dimensions are 93 in. long, 35 in. wide and 45 in. high.

### Theftproof Lamp Base Promotes Safety

The Kulp Theft Proof Lamp Co., Chicago, Ill., is manufacturing a theft-proof base which, when fitted to a standard Mazda lamp, prevents its unauthorized removal. The device consists of a screw shell held onto the base by a small pin. When it is turned in until the base makes contact, an extra twist shears off this pin and the lamp turns freely while the screw shell remains tight in the socket.

### Oxyacetylene Truck Makes Handling Easy

After thorough tests in field and shop, a new type of two-wheel truck has been put on the market by the Oxweld Acetylene Co., New York City. Increase in wheel size was a primary consideration in the design, larger wheels making the truck much easier to handle.

The illustration shows the new truck equipped with 24-in. steel wheels, having  $3\frac{1}{2}$  in. grooved tires and a cast-iron hub. The hub is bored to fit the cold-rolled steel axle and a grease cup is provided.

The handle is continuous and the upper portion is bent back about 8 in. so that the truck can be easily handled by an operator of small stature. The tool box is larger and is provided with a cover and a holder for extra blow-pipe tips.

Where 24-in. wheels are not required, 14-in. wheels may be used instead merely by changing the posi-

## What's NEW in Coal-Mining Equipment



Truck With 24-in. Wheels

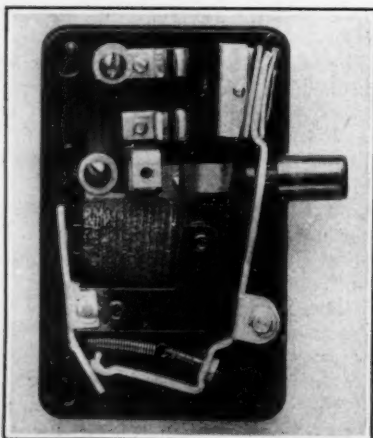
tion of the axle to the lower set of holes already drilled in the frame. The same frame and axle can be used with either size wheels. No grease cups are necessary with the smaller wheels.

### Small Motors Protected By Low-Cost Breaker

Relative cost has prevented general use of overload circuit breakers on fraction-horsepower motors. Now the Precise Mfg. Co., Rochester, N. Y., has placed on the market a guaranteed overload circuit breaker, the "No. 1600 Protectoswitch," which is listed at \$3.75. It can be used with motors of  $\frac{1}{4}$ -hp. capacity or smaller and therefore is suitable for use in the circuits of small portable drills.

The dimensions are  $3\frac{1}{2} \times 2\frac{1}{4} \times 1\frac{1}{2}$  in. The mechanism is mounted on a Bakelite base and is protected by a metal cover. Red and black push buttons ex-

Protectoswitch in Open Position With Cover Removed



tending through the case make it possible to use the breaker as a switch. For 110 and 250 volts a.c. the maximum current rating is 9 amp., and for 240 volts d.c., 4 amp. Fine adjustment for opening the circuit at any current between 3 and 16 amp. can be made by turning a screw stud inside the housing.

### Insulated Lamp Guard Averts Many Dangers

An insulated lamp guard for use in central stations, around switchboards and in other places where there is likelihood of contact with bare wires or connections has been perfected by the Ericson Mfg. Co., Cleveland, Ohio. The



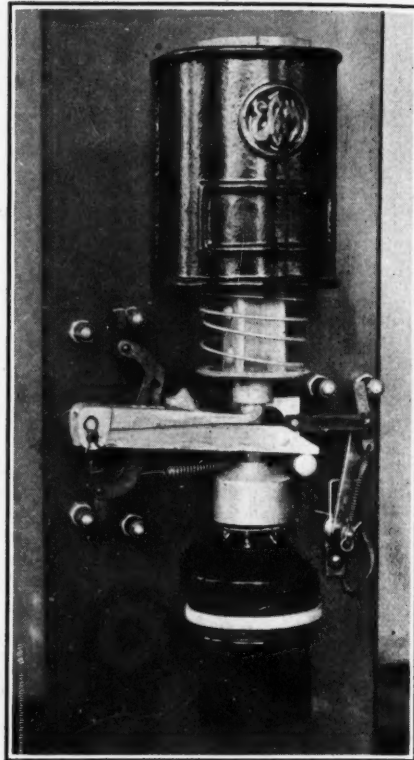
Insulated Lamp Guards

guard consists of a metal framework to which the necessary thickness of rubber has been added in layers. For reflector guards the interior of the shade is coated with aluminum paint after the rubber is put on.

### Relay Not Affected By Temperature

The Type HG time relay, which may be used for any service requiring an electrical circuit to be made or broken after a definite interval, is made by the Electric Controller & Mfg. Co., Cleveland, Ohio. This relay operates on the hour-glass principle with mercury escaping through an orifice in the bottom of a cup. The absence of dashpots makes it particularly well suited to conditions of widely varying room temperatures, as temperature changes do not affect its accuracy.

The coil may be arranged for 110 to 550 volts, 25 to 70 cycle alternating current or 115 to 550 volts direct current. Relays for a.c. purposes have continuous duty operating coils. Relays for d.c. use have intermittent duty coils which are protected for continuous duty, where required, by a protective resistor unit which is inserted by the open-type



Indifferent to Temperature

control contacts when the relay closes. Alternating-current relays are provided with a laminated plunger equipped with shading coil to keep them quiet in operation.

### Improved Truck Body Dumps Three Ways

An improved truck body and hoist which will enable material to be dumped to the rear or to either side is being marketed by the Commercial Shearing & Stamping Co., Youngstown, Ohio. These bodies may be had in capacities from  $1\frac{1}{2}$  to 15 tons. Dumping is controlled from the driver's seat and a small lift is all that is necessary to discharge the load. With this body, the truck driver can get up alongside the dump without backing or turning to get into position.

Loses No Time Getting in Position

